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No. 13

March 30, 1918

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"Conscripting the Economic Man"

This is the title of a timely and forceful article in a recent issue of the New York *Times* Magazine, in which the writer, Henry W. Farnam, Professor of Economics, Yale University, says:

> *"In conscripting the economic man we must teach him discrimination until it becomes as much a habit with him to distinguish between perishable and durable goods * * * as it is for him to insure his buildings against a fire which may never come."*

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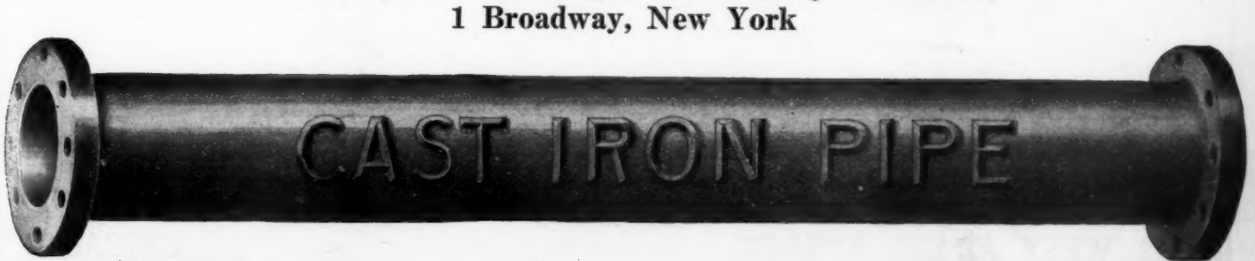

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The Standard Method

of

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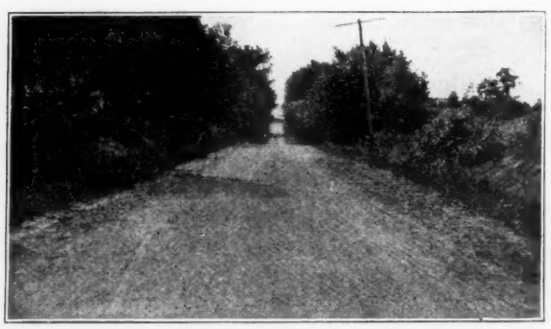
Stanolind Paving Asphalt is applied with a pressure tank wagon made specially for this work, as shown in illustration to the left.

Water Bonded Gravel Road after being treated with Stanolind Paving Asphalt at 300° F., 45 lbs. pressure, applied with special pressure tank wagon, one-half gallon to the square yard.



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Municipal Journal

Volume XLIV. NEW YORK, MARCH 30, 1918 No. 13

OPERATION OF SEWAGE WORKS IN IOWA*

Conditions Found by Author at Thirty-nine Plants—Inefficient Operation Due to Lack of Funds, Ignorance and Carelessness—Sedimentation, Septic and Imhoff Tanks, Sand Filters, Sprinkling Filters and Contact Beds.

By J. H. DUNLAP.†

Two characteristics of Iowa must be kept in mind in considering the operation of sewage works in this State. In the first place, the population of Iowa is widely scattered among about 2,300 cities, towns and villages, of which 892 were reported in 1915 as cities and incorporated towns. Of these 892 cities and incorporated towns 15 are cities of the first class with populations of 15,000 or over; 85, cities of the second class with populations from 2,000 to 15,000; and 792 incorporated towns with populations less than 2,000. It is interesting to note that there are in Iowa about 450 water works systems, 182 sewerage systems, and 102 sewage treatment plants. Forty-two of these 102 sewage treatment plants are in towns of less than 1,300 population. Mason City with a population of 17,152 in 1915 is the largest city to construct a sewage disposal plant.

In the second place, towns in Iowa are situated for the most part either upon unimportant water courses or upon none at all. Most of the sewage treatment plants now built discharge their effluents either into small creeks or into drainage ditches which dry up nearly every summer.

The importance of these two characteristics of Iowa is plain. The large number of little towns having sewage treatment plants means neglect of the plant, since the administration of the affairs of small towns is apt to be carried on by men who have neither time nor inclination to give proper attention to the management of a sewage treatment plant. The second fact, the lack of large streams, or as is frequently the case, the lack of any streams at all, requires efficient management of sewage treatment plants if nuisance is to be avoided.

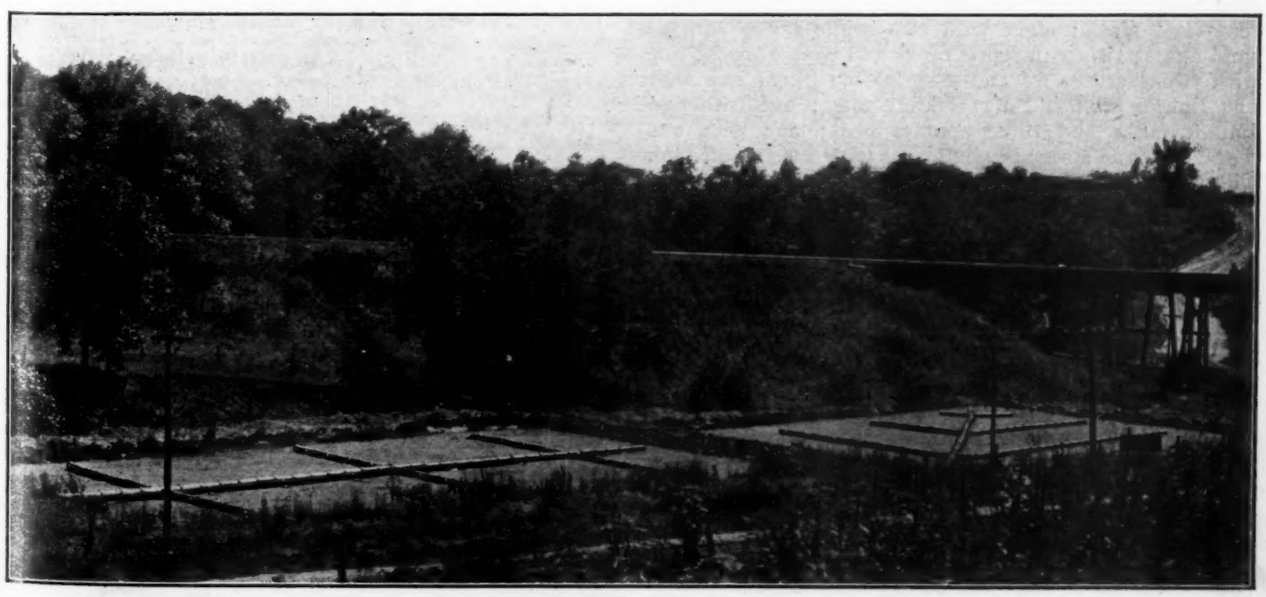
The law in Iowa requires high standards of purification. Section 4979, Supplement to the Code of 1913, provides as follows:

> If any person throw, or cause to be be thrown, any dead animal, night soil or garbage into any river, well, spring, cistern, reservoir, stream or pond, or in or upon any land adjoining, which is subject to overflow, he shall be imprisoned in the county jail not less than ten nor more than thirty days, or be fined not less than five nor more than one hundred dollars.

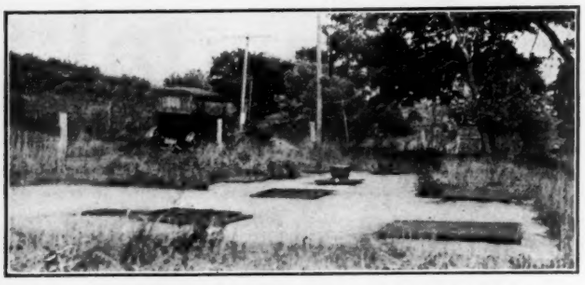
The State Board of Health, with the approval of the Attorney-General, has interpreted this section in its Rules

*Paper before the Municipal Engineering Section of the Iowa Engineering Society.

†Associate Professor of Hydraulics and Sanitary Engineering, State University of Iowa, Iowa City, Iowa.



TWO SAND FILTERS AT ALBIA.



ALBIA. TWO IMHOFF TANKS WITH FLAT SLAB COVERS.

and Regulations, Chapter VII, Rule 1, Section 1, as follows:

No person, firm, corporation, public institution or municipality shall discharge, or permit to be discharged, into any lake, pond, natural or artificial depression or reservoir, river or other water course of this State, or deposit or cause to be deposited upon any land subject to overflow, any untreated domestic sewage, industrial sewage or garbage, or any other domestic or industrial refuse or any other noisome substance whatsoever, or the effluent of any sewage treatment plant which does not conform to the standards of purification established by the State Board of Health in its supervision of the operation of such sewage treatment plants.

Now, it is one thing to put a law upon the statute books, and it is quite another thing to carry it into effect. For years the Iowa State Board of Health has been endeavoring to secure sufficient appropriations so that this law, as well as other important sanitary legislation, may be enforced. Thus far it has been possible to secure financial provision for only one sanitary engineer for the State Board of Health. It is safe to say that at least three men ought to be employed instead of one.

During the last summer the State Board of Health found it possible to employ the writer for about three months for the purpose of inspecting water works, sewer systems and sewage treatment plants. Of the 102 sewage treatment plants in the state it was found possible to visit only 39 plants, located in 32 different cities and towns. In addition to this, three sewage treatment plants at state institutions were inspected.

The following types of plants were found: Twenty-four with preliminary sedimentation tanks and intermittent sand filters; eight with two septic tanks without sand filters; two with septic tanks and contact beds; one with two septic tanks and a sprinkling filter; one with one Imhoff tank and a sprinkling filter; one with two Imhoff tanks and three contact beds; one with one septic tank and a sewage pond; one with one Imhoff tank without sand filters. Of the 24 plants with sedimentation tanks and intermittent sand filters, 8 had sedimentation tanks of the Imhoff type. Of the latter, two plants had two Imhoff tanks; the remaining six, one Imhoff tank each. Discussion will be confined to operation of plants with sedimentation tanks, or with tanks and intermittent sand filters, since 32 of the 39 plants inspected were of this type.

Now, of all these 39 plants not one can be scored 100 per cent efficient. Of course the conditions found at the time of the visit may not do some of these plants justice. Seemingly every possible variation from perfection was found. A summary of the actual findings at the 24 plants with both sedimentation tanks and sand filters may prove instructive. Unless otherwise stated, each plant has two septic tanks and two sand filters. The populations given are those of the 1915 census.

Ackley, population 1,289. The filters were weedy, the sand ridges between the two beds were broken through and there were holes in the filters leading directly to the underdrains. Care had been insufficient.

Albia, population 5,138. The two Imhoff tanks were found to be miniature septic tanks. The slot connecting the sedimentation chamber with the sludge chamber had been clogged up and the sedimentation chamber was well sludged up. The flat slab covers made it practically impossible to operate the Imhoff tanks properly. The filter beds were somewhat out of level, and the distribution was uneven. The plant had been receiving insufficient care.

Ames, population 5,091 (city plant). Both filters were flooded with sewage, due to too high a rate of filtration.

Carroll, population 4,031. The plant consists of two septic tanks and five sand filters. The filter beds have about reached their normal capacity. The plant was in excellent condition with the exception of some trouble with the siphons. The plant receives regular, intelligent care.

Chariton, population 5,235. The three plants, each with one Imhoff tank and two intermittent sand filters, were completely neglected. The flat slab covers made the Imhoff tanks quite inaccessible.

DeWitt, population 1,877. The filters were overloaded and slightly weedy. With these exceptions the plant was in first-class condition, since it receives excellent, regular care.

Fairfield (southeast plant), population 6,113. The plant consists of one Imhoff tank and three sand filters. The Imhoff tank was found to be a miniature septic tank, since the connection between the sedimentation chamber and the sludge chamber had become clogged and the sedimentation chamber had become well sludged up. The flat slab cover made it difficult to keep the Imhoff tank in good operating condition. The grit chambers were misunderstood. The filter beds were being operated with no ridges between the three filters. The wooden distribution troughs were in bad condition. The plant had not been receiving proper care.

Fairfield (northeast plant). The type of plant and the conditions found were the same as at the southeast plant just described.

Grinnell, population 5,061. The plant consists of two Imhoff tanks and four sand filters. The two Imhoff tanks were found to be sludged up. The sedimentation chambers were miniature septic tanks. The distribution upon the sand filters was found imperfect. Trouble was experienced in removing sludge from the tanks, since no water connections were available. The plant was receiving regular but not intelligent care. The flat slab covers have now been removed.

Knoxville, population 3,541. The two filter beds were badly overworked. The tile distribution lines needed attention. The siphons have always caused trouble. The plant receives excellent care.

Lake View, population 814. The two filters were somewhat weedy, and soil from the banks was being washed down upon the surface of the beds. The outfall wall was being undermined. The plant was receiving care every two weeks.

Lisbon, population 879. The filter beds needed weeding; the distribution over the beds needed correcting; some repairs were necessary upon the distributors. No care is given the plant.

Marion (new plant), population 4,675. The two filters showed uneven distribution of sewage. The siphons were giving trouble. Since there is no sludge bed the sludge from the septic tanks is flushed directly into the creek.

Mount Vernon, population 1,568. The two sand filters were badly overworked. With no sludge bed available, the custom is to sludge the septic tank directly into the creek. The plant has excellent care.

Nevada, population 2,686. Both filters were being bypassed at the time of visit. One filter was still flooded from high water in the creek. The filter beds were badly

AMES. TWO SAND FILTERS FLOODED.

overworked, operating at at least three times the normal rate. In winter the beds are by-passed. The plant receives regular care.

Newton, population 5,165. Serious trouble with gas waste had put both the Imhoff tank and the two filter beds out of commission. The Imhoff tank had been improperly constructed in the first place, with holes at the bottom of the sedimentation chambers instead of continuous slots. The flat slab cover has been removed.

Oelwein, population 7,137. The plant consists of two septic tanks and four sand filters. The filter beds were badly overworked. The plant receives regular daily care.

State Center, population 1,037. The filter beds were by-passed at the time of the visit. The beds needed cleaning, and the banks needed seeding. The plant receives no regular care.

Sumner, population 1,585. The plant consists of one septic tank and two sand filters. The filters were permanently by-passed, since they had been constructed with their drainage system too near the level of the creek.

Tipton, population 2,176. The filter beds were badly overworked. They had been flooded recently and the plank distributors floated out of place. With no sludge bed, the septic tanks are sludged directly into the creek. The filters are by-passed in winter. The plant receives little care.

Toledo, population 1,721. Both filter beds were found flooded from high water in the creek. In winter the plant is by-passed. It receives no regular care.

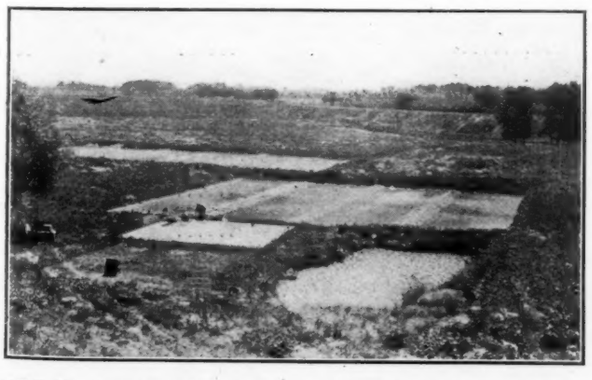
West Liberty, population 1,760. The two sand filters were badly overworked. Due to trouble with the siphons, one bed was receiving more than its share of the sewage. The beds were uneven on the surface and badly clogged. The sludge from the septic tanks is flushed directly into the creek. In the winter the plant is apparently by-passed. The care received is negligible.

With this general survey in mind of all the plants visited, it may be interesting to imagine now a composite plant, made up of all of those described. Some of the weaknesses of this composite Iowa plant, viewed from the operating standpoint, will now be presented. One caution is necessary. Such suggestions as will be made are offered in no spirit of destructive criticism. Of course many of the defects found are due solely to the inadequate funds available at the time of construction. The discussion will follow this order: first, grit chambers; second, septic tanks; third, Imhoff tanks; fourth, sludge beds; fifth, siphon chambers; sixth, intermittent sand filters.

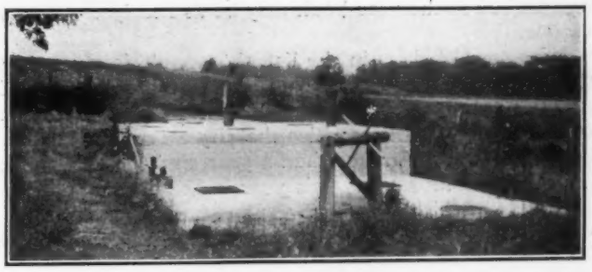
1. GRIT CHAMBERS.

Grit chambers must be so made that all parts are readily accessible. Flat slab covers, close to the surface of the sewage, with insufficient openings, must be done away with.

Grit chambers must be thoroughly cleaned after each storm, and at least once a week in dry periods. Therefore, adequate means for flushing out their contents must be provided. Grit chambers under conditions in Iowa, whose contents must be removed by lifting them out of the top of the chambers, are naturally seldom cleaned. Accordingly, they soon become small septic tanks and are worse than useless. The valves upon these grit chambers should be so made that they are easily operated.



CARROL. TWO SEPTIC TANKS AND FIVE SAND FILTERS. SLUDGE BEDS IN FOREGROUND.



FAIRFIELD. IMHOFF TANK WITH FLAT SLAB COVER.

(To be continued.)

THAWING SERVICES AT LAWRENCE.

At Lawrence, Kan., as in many other cities in that section of the country, many water works services were frozen during the extreme cold of last winter. In that city about 100 services were frozen, of which about 40 were thawed by use of electricity. How this was done is described for us by E. H. Dunmire, superintendent of water works and city engineer.

The department borrowed a 2,300—220 and 110-volt transformer from the local electric lighting company, and two resistance boxes from the electrical department of the university, and purchased about 1,200 ft. of No. 8 insulated wire. The services thawed varied in length from 25 ft. to 100 ft., and required the actual use of the current for from 5 minutes to 1½ hours. The full capacity of the transformer was used, stepped down to 110 volts. The amperage varied from 70 to 110, depending usually on the length of wire that it was necessary to use.

All of the equipment was placed in one wagon, which was used as a trailer to a small auto truck. This was taken to the point nearest to the services to be thawed where it could be installed, and was connected by the local electric light company's man, for whose services the city paid 60c per hour for the time required to connect up the wires. It also paid the company 10c per hour for current, with a minimum charge of $1.00 for each connection. After the connection had been made the equipment was left in charge of two employees of the water department, who were paid 35c and 28c per hour. These men laid out the wire and connected it to the services and guarded the apparatus until the service was thawed. The electric light company's man was then called to disconnect the transformer from the primary line and accompany the equipment to the next place where there were services to be thawed.

With this arrangement and procedure the department was able to thaw about 12 services a day. The average cost of thawing the 40 services was about $3.25.

CITY MANAGERS AND THEIR SALARIES.

The Secretary-Treasurer of the City Managers' Association, Harrison G. Otis, manager of Auburn, Me. (until recently manager of Beaufort, S. C.), has compiled a list of city managers that is believed to be correct up to March 1st, and which is reproduced below. This list will be published in the year-book of the association, which will be in the printer's hands in a few days. If any of our readers find any errors in this list, or know of any changes made since the data therein were reported, or of any additional cities that should be added, we hope that they will inform Mr. Otis at once, in order that the list

as published in the year-book may be as nearly correct as possible.

There are 118 cities in the list, the populations varying from a minimum of 500 (Largo, Fla.), to a maximum of 142,000 (Grand Rapids, Mich.). It will be seen that in quite a number of these cities the city manager plan has been in operation for less than a year, and the number in which it goes into effect this year indicates the growing popularity of this form of government.

The salaries appear in general to be fairly high, more than one-half of the 93 reported being $2,000 or more, while 13 are $5,000 or more. Two thousand dollars, of course, is a small salary for an important executive position, but considering the small size of most of the communities that are paying this amount or less, the salary may be considered a fair one. Twenty pay $2,000 or more but less than $3,000; 15 pay $3,000 or more but less than $4,000; 9 pay $6,000 or more, 6 pay $7,000 or more, and 4 pay $8,000 or more. The subject of salaries is discussed editorially on another page.

Municipalities Under Manager Plan, March 1, 1918.

Note.—By "Manager" is meant, "Any person who is the administrative head of a municipality appointed by its legislative body." (By-Laws City Managers' Association, Art. 1.)

City.	Population, 1918.	In Effect.	Manager.	Appointed.	Salary.
Auburn, Me.	17,000	Feb. '18	H. G. Otis	Feb. '18	$3,600
Norwood, Mass.	12,500	Jan. '15	.....	.....	....
Waltham, Mass.	30,000	Mar. '18	C. A. Bingham	Mar. '18	5,000
Newburgh, N. Y.	30,000	Jan. '16	Henry Wilson	Jun. '16	5,000
Niagara Falls, N. Y.	55,000	Jan. '16	O. E. Carr	Jan. '16	5,000
Sherrill, N. Y.	1,500	May '16	C. A. Brown	May '16	....
Altoona, Pa.	60,000	Jan. '18	H. G. Hinkle	Jan. '18	8,000
Bethlehem, Pa.	15,000	Mar. '18	.....	.....	....
Edgeworth, Pa.	8,000	Jan. '14	W. M. Cotton	Oct. '17	2,400
Grove City, Pa.	4,000	Apr. '16	Edw. Thomas	Jan. '18	....
Titusville, Pa.	12,000	Dec. '13	H. A. Holstein	Dec. '13	2,100
Charlottesville, Va.	12,000	Aug. '13	H. A. Stecker	Jan. '17	2,000
Farmville, Va.	5,000	Sep. '15	Leslie Fogus	Sep. '17	1,200
Fredericksburg, Va.	7,000	Sep. '12	R. S. Royer	Sep. '17	3,000
Norfolk, Va.	90,000	Sep. '18	.....	.....	....
Petersburg, Va.	26,000	Sep. '20	.....	.....	....
Portsmouth, Va.	40,000	Jan. '17	W. B. Bates	Aug. '17	4,000
Staunton, Va.	12,000	Jan. '08	S. D. Holsinger	Jul. '11	1,800
Winchester, Va.	7,000	May '16	A. M. Field	May '16	2,000
Charleston, W. Va.	30,000	May '15	M. J. McChesney	Sep. '17	3,300
Wheeling, W. Va.	44,000	Jul. '17	G. O. Nagle	Jul. '17	8,000
Elizabeth Cy., N. C.	12,000	Apr. '15	J. C. Commander	Apr. '15	1,800
Durham, N. C.	25,000	May '17	W. M. Wilkes	May '17	3,600
Goldsboro, N. C.	11,000	Jul. '17	E. A. Beck	Jul. '17	3,300
Hickory, N. C.	5,200	May '15	J. W. Ballew	Mar. '16	1,500
High Point, N. C.	11,000	May '15	T. J. Murphy	May '17	2,700
Morganton, N. C.	5,000	May '13	W. R. Patton	Jan. '18	1,500
Tarboro, N. C.	5,500	Apr. '15	J. H. Jacocks	Apr. '15	1,500
Thomasville, N. C.	5,500	May '15	J. R. May	.....	....
Beaufort, S. C.	3,500	May '15	J. R. Kneebone	Feb. '18	1,500
Rock Hill, S. C.	10,000	Jan. '15	J. C. Barnwell	Jan. '15	2,500
Sumter, S. C.	10,000	Jan. '13	E. S. Shuler	Jan. '17	1,200
Griffin, Ga.	8,000	Dec. '18	.....	.....	....
Largo, Fla.	500	Jun. '13	G. J. Perkins	Mar. '16	900
Ocala, Fla.	6,000	Feb. '18	J. N. Johnston	Feb. '18	....
St. Augustine, Fla.	6,500	Jul. '15	W. L. Miller	Jul. '15	3,600
Ashtabula, O.	21,000	Jan. '16	M. T. Turner	Jan. '18	....
Dayton, O.	140,000	Jan. '14	J. E. Barlow	Mar. '18	7,500
E. Cleveland, O.	23,000	Nov. '17	C. M. Osborn	Nov. '17	3,600
Gallipolis, O.	6,000	Jan. '18	Edw. E. Myers	Jan. '18	1,500
Sandusky, O.	23,000	Jan. '16	G. T. Lehrer	Apr. '17	3,000
So. Charleston, O.	1,200	Jan. '18	P. H. Cheney	Jan. '18	1,400
Springfield, O.	60,000	Jan. '14	C. E. Ashburner	Jan. '17	6,000
Westerville, O.	3,000	Jan. '16	R. W. Orebaugh	Sep. '17	1,500
Xenia, O.	9,000	Jan. '18	Kenyon Riddle	Jan. '18	3,000
Cynthiana, Ky.	4,000	Dec. '15	Daniel Durbin	Dec. '15	900
Johnson Cy., Tenn.	11,000	Jul. '09	P. F. McDonald	Jul. '09	1,800
Kingsport, Tenn.	8,000	Mar. '17	W. R. Pouder	Mar. '17	3,000
Albion, Mich.	8,000	Jan. '16	A. L. Sloman	Sep. '16	1,500
Alpena, Mich.	13,000	Apr. '16	H. G. Roby	Apr. '16	2,500
Big Rapids, Mich.	5,200	May '14	Walter Willits	May '16	1,200
Birmingham, Mich.	6,000	Apr. '18	.....	.....	....
Cadillac, Mich.	9,000	Mar. '14	Geo. Johnston	Jan. '18	2,000
Eaton Rapids, Mich.	5,000	Apr. '13	.....	.....	....
Grand Haven, Mich.	7,000	Apr. '15	I. R. Ellison	Apr. '16	1,800
Grand Rapids, Mich.	142,000	Mar. '17	G. C. Cummin	Mar. '17	10,000
Grosse Pte. Shores, Mich.	1,200	Jun. '16	G. A. Abbott	Jun. '16	1,800
Jackson, Mich.	45,000	Jan. '15	A. W. D. Hall	Apr. '17	4,000
Kalamazoo, Mich.	60,000	Apr. '18	.....	.....	....
Manistee, Mich.	13,000	May '14	C. E. Ruger	May '14	2,000
Muskegon Heights, Mich.	3,000	Jan. '18	.....	.....	....
Petoskey, Mich.	6,000	Apr. '16	R. D. Tripp	Mar. '17	1,800
Royal Oak, Mich.	5,000	Jun. '18	.....	.....	....
Sault Ste. Marie, Mich.	13,000	Dec. '17	J. H. Moore	Dec. '17	3,600
Three Rivers, Mich.	6,000	Apr. '18	.....	.....	....
Glencoe, Ill.	3,100	Jan. '14	H. H. Sherer	Jan. '14	2,500
Winnetka, Ill.	5,500	Jan. '15	H. L. Woolhiser	Oct. '17	3,000
Anoka, Minn.	2,000	Apr. '14	Henry Lee	Apr. '14	1,200

City.	Population, 1918.	In Effect.	Manager.	Appointed.	Salary.
Morris, Minn.	2,300	Jan. '14	S. A. Siverts, Jr.	Jan. '14	1,800
Pipestone, Minn.	3,000	May '17	F. E. Cogswell	May '17	1,700
Clarinda, Iowa	5,700	Apr. '13	T. A. Wilson	Apr. '13	1,700
Iowa Falls, Iowa	4,000	Apr. '14	J. O. Gregg	Mar. '17	1,500
Manchester, Iowa	3,300	May '16	Thos. Wilson,	May '17	1,440
Mt. Pleasant, Iowa	4,200	Apr. '16	T. W. McMillan	Apr. '16	1,530
New Hampton, Iowa	2,800	'17	.....	.....	1,400
Webster City, Iowa	6,000	Oct. '15	J. G. Long	Apr. '17	1,800
Bentonville, Ark.	3,600	Sep. '15	Edw. Masoner	Sep. '15	1,500
Hot Springs, Ark.	15,000	Apr. '17	C. H. Weaver	Apr. '17	2,500
Carrington, N. D.	....	May '17	F. J. Beier	May '17	1,200
Clark, S. D.	1,500	May '12	J. E. Smith	Jun. '12	960
El Dorado, Kans.	5,000	Jul. '17	B. C. Wells	Jul. '17	3,600
Wichita, Kans.	55,000	Jun. '17	L. R. Ash	Jun. '17	10,000
Collinsville, Okla.	7,500	Feb. '14	F. A. Wright	May '16	1,500
Madill, Okla.	4,000	'17	H. L. McDuffie	Dec. '17	1,800
Mangum, Okla.	....	Nov. '14	W. F. Hearne	Feb. '17	1,800
Amarillo, Tex.	17,500	Dec. '13	A. D. Armstrong	'17	....
Ballinger, Tex.	....	Jan. '17	.....	.....	....
Brownsville, Tex.	18,000	Jan. '16	.....	.....	....
Brownwood, Tex.	7,000	'17	W. E. Dickerson	.....	....
Bryan, Tex.	7,000	Aug. '17	J. W. Greer	Aug. '17	2,400
Denton, Tex.	6,500	Apr. '14	P. J. Beyette	Jan. '18	2,000
Lubbock, Tex.	2,000	.....	.....	.....	....
San Angelo, Tex.	15,000	Apr. '16	E. L. Wells	May '16	2,500
Sherman, Tex.	16,200	Apr. '15	O. J. Ellingser	Apr. '16	2,400
Taylor, Tex.	10,000	Apr. '14	.....	.....	....
Teague, Tex.	5,000	Jan. '15	E. B. St. Clair	Apr. '16	1,700
Tyler, Tex.	15,000	Apr. '15	Clay Hight	Apr. '15	3,000
Yoakum, Tex.	....	Apr. '15	Walter Lander	Apr. '15	2,100
Glasgow, Mont.	5,000	Jul. '16	C. H. Blitman	Sep. '16	2,100
Boulder, Colo.	12,000	Jan. '18	E. O. Heinrich	Jan. '18	4,000
Durango, Colo.	6,000	Mar. '15	A. F. Hood	May '15	1,800
Montrose, Colo.	4,500	Feb. '14	J. E. McDaniel	Sep. '15	1,800
Albuquerque, N. Mex.	14,000	Jan. '18	P. G. Redington	Jan. '18	4,500
Roswell, N. Mex.	8,000	May '14	A. G. Jaffa	'16	1,800
Brigham City, Utah	4,000	Jan. '18	C. O. Roskelley	Jan. '18	....
Phoenix, Ariz.	25,000	Apr. '14	V. A. Thompson	Jan. '18	5,000
LaGrande, Ore.	7,000	Oct. '13	Fred Currey	.....	2,400
Alameda, Cal.	30,000	May '17	C. E. Hewes	May '17	4,000
Alhambra, Cal.	9,000	Jul. '15	F. L. Hilton	May '17	2,000
Bakersfield, Cal.	20,000	Apr. '15	F. S. Benson	.....	3,000
Glendale, Cal.	8,500	May '14	T. W. Watson	May '14	1,800
Huntington Beach, Cal.	2,000	Jul. '16	G. W. Spencer	Jul. '16	2,400
San Diego, Cal.	90,000	May '15	F. M. Lockwood	May '15	6,000
San Jose	40,000	Jul. '16	T. H. Reed	Jul. '16	6,000
San Rafael, Cal.	6,000	Aug. '15	.....	.....	....
Santa Barbara, Cal.	18,000	Jan. '18	R. A. Craig	Jan. '18	7,500
Hanford, Cal.	....	Oct. '17	Jay Hinman	Oct. '17	1,800

GARBAGE DISPOSAL IN COLUMBUS

Decreased Amount of Garbage and Decrease of Fats in Same Due to Food Economizing Reduce Income from Reduction Plant—Detail Cost of Operating Plant—Recovering Alcohol from Garbage.

The garbage reduction plant at Columbus, O., is one of the best known of the country and probably the most efficiently operated. It has been described at considerable length in Municipal Journal and more or less extended reference made to it from time to time. The report for 1917 of the superintendent, Thomas D. Banks, indicates that this plant has experienced a number of changes from previous conditions due to prices and practices resulting from the war.

In the first place, the amount of garbage handled during the year was about 21½ per cent less than in 1916 and 25 per cent less than in 1915, owing to conservation of food. In addition to this reduction in total amount of garbage, the amount of grease contained in the garbage was 42 per cent less than that in 1916, or 24 per cent less per ton of garbage. The decrease in tankage was almost the same as that in the total amount of garbage. On the other hand, the market value of both tankage and grease was greater than during the previous year, which resulted in a slight increase of total returns in the tankage, but was not sufficient to overcome the decrease in amount of grease, the amount received for which was about $11,000 less than in 1916. The price received for grease averaged about 7.5 cts. per pound, or $3.40 per ton of garbage treated. The price received for tankage was $10.84 per ton, or $1.108 per ton of garbage treated. Per ton of green garbage, there was obtained 45.22 pounds of grease and 204.28 pounds of tankage.

In view of the decrease in garbage and the resulting loss to the plant, Mr. Banks urges that every effort be made to see that all the garbage is collected and that none is destroyed. This he requested not merely on the ground of revenue to the city, but also because grease and tankage are both of great aid in the prosecution of the war. It has been calculated that one ton of average garbage will yield sufficient glycerine to furnish high explosives for ten 75-mm. shells and soap stock for 125 pounds of laundry soap. From the tankage can be obtained fertilizer containing sufficient plant food, in the form of nitrogen, phosphate, and potash, to raise ten bushels of wheat. He estimates that Columbus garbage would in a year yield glycerine for 111,000 shells, soap stock for more than 1,550,000 pounds of laundry soap, and fertilizer sufficient for raising 117,000 bushels of wheat.

During the year, there were completed the tests of a process for recovering the alcohol from garbage, to which reference has been made previously in Municipal Journal. This showed that at least 4.8 gallons of alcohol

could be produced from each ton of garbage. This would give an additional profit in the case of the Columbus plant of about $30,000 a year without reducing the income from the other products, releasing for food purposes 30,000 bushels of shelled corn which is now used in the manufacture of that amount of alcohol. This financial return is based on the present high price of alcohol, and the City Council has been unwilling to spend the money required for installing an alcohol-recovery plant for fear that the price would fall before the money to be invested could be recouped.

The plant used, during 1917, 6,403 tons of coal or 746 pounds per ton of garbage; 125,240 kwh. of electric power, or 7.293 per ton of garbage; and 19,465 gallons of gasoline, or 1.134 gallons per ton of garbage.

The cost of operation of the reduction plant during 1917 was as follows:

	Total Cost.		Cost per ton Garbage.
Supervision	$3,590.00		$0.20906
Clerk Hire	1,003.00		.05841
Labor for Operation	25,891.04		1.50774
Office Supplies	60.28		.00351
Fuel	25,027.04		1.45743
Clothing	15.00		.00090
Mechanical and Motor Vehicle Supplies	1,597.64		.09304
Other Supplies	179.97		.01048
Transportation of Employees	275.00		.01601
Telephone and Telegraph	70.61		.00411
Insurance	81.86		.00488
Taxes and Rent	5.00		.00029
Light and Power	2,145.91		.12496
Other Contractual Service	274.22		.01597
Maintenance Buildings	....		....
" R. R. Tracks	268.43		.01562
" Equipment	6,773.75		.39446
Other Maintenance	112.68		.00656
Total	$71,911.12		$4.188
Actual Production	$79,344.48	$4.621	
Actual Cost	71,911.12	4.188	
Profit	$ 7,433.36	$ .433	

Note: Fixed charges such as interest and sinking fund are not included in above cost.

From a table showing the amount of garbage collected each month, it is learned that each month of the year 1917 showed a decrease from the corresponding month of the previous year, this decrease being greatest in May and least in October. The average for the year was 156.11 pounds per capita. (In 1915 the amount was 218 pounds per capita.) The cost of collection of the garbage was 22.3c per capita. The garbage was collected once a week only, a change from previous years during July, August and September, in which months it had been collected twice a week prior to 1917. The average number of loads collected by each team was two, except that those collecting from hotels made from 2 to 4 loads. The loads averaged 1.21 tons.

In addition to the garbage, the department collected 36,228 loads of rubbish totalling 172,461 yds., which was an increase of 16,649 yds. over the previous year. It also collected 2,504 tons of manure, which was a decrease of 468 tons from 1916. The rubbish was overhauled for valuable matters, and there were recovered from it bottles, paper, tin cans, iron and other scrap metal, rags, etc., which were sold for $3,521.75.

CONNEAUT FIRE DEPARTMENT ITEMS.

We are informed by Thomas J. Gough, chief of the fire department of Conneaut, O., that the members of the department have been given an increase in salary of $15 a month, the increase going into effect on March 1st. The department is now working under the two-platoon system, which was established on January 1st, 1917, and which is reported to be working very satisfactorily for all concerned.

OIL FOR CREOSOTING WOOD PAVING BLOCKS.

The Chicago Specifications and the Injunction Suit to Prevent Their Use—Aim to Secure Unadulterated Coal Tar Distillate.

During the past few years there has been much discussion of the question of the proper specification for oil for treating blocks for creosoted wood block pavements, and the technical societies have been slow to adopt specifications because of the strenuous efforts that have been made on the one hand to restrict the oils to be used to those made of mixtures of creosote oils and crude coal tar, and on the other hand to prevent such restriction on the grounds (1) that good oils, even better oils for the purpose, would be rejected and (2) that the use of coal tar mixtures would be detrimental to the cause of wood block pavements. The only society which has adopted standard specifications is the American Society of Municipal Improvements, which, as the result of several years' discussion, has recently adopted three specifications for the oil for treating blocks, choice of which may be made by the city using them. One oil is called coal-tar paving oil, one is called coal-tar-distillate oil, and one is refined water-gas tar. These specifications have been subjected to criticism as to some of their details and may be modified as the knowledge of the state of the art advances.

Some technical information of great value in the consideration of this problem is contained in the evidence presented on both sides of a recent injunction suit on trial for four days in Chicago, brought to prevent the use of the so-called Chicago specification for creosote oil for treating wood paving blocks. The specification was sustained mainly on purely legal propositions, but the evidence is none the less interesting.

It was admitted in the case that the city had experienced much trouble with bleeding of blocks treated with coal-tar paving oils and was considering the abandonment of wood block paving as a consequence, but the satisfactory nature of two streets laid with blocks treated with a coal-tar-distillate oil led to the adoption in 1912 of a specification which has become widely known as the Chicago specification. In the case in court it was shown that some modfiications had been made in details of this specification to prevent as far as possible the adulteration of the coal-tar-distillate oil with crude coal tar or distillates of petroleum, these modifications having been made in 1914 and 1915.

The Chicago specification was the first detailed attempt to secure for street paving purposes an oil which would fulfill the three most essential demands made of a material for treating wood blocks for paving, assuming, as practically all authorities do, that an oil meeting these demands will necessarily possess enough preservative qualities to prevent decay of the wood:

(1) An oil high enough in boiling point so that it will not evaporate materially at any temperature of the street;

(2) A waterproof oil, insoluble in water;

(3) An oil liquid enough at temperatures used in the commercial treatment of blocks to diffuse throughout the blocks, and containing no impurities that will prevent or delay such diffusion.

The Chicago specification proposes to meet the first of these requirements by providing that not more than 22

per cent of the oil shall distil below 235 deg. C., and not more than 40 per cent below 315 deg. C. This results, in a coal-tar-distillate oil, in a specific gravity of 1.10 to 1.14, which is an accompanying requirement of the specifications. It was shown that, with the distillation requirement above, the 1.08 minimum specific gravity of the original Chicago specification was of no significance, as a coal-tar-distillate oil of 1.08 specific gravity probably could not meet the distillation tests given above. These heavier oils practically meet the above named second demand made of a perfect paving oil.

The third demand of the perfect oil named above, fluidity and diffusibility at temperatures of treatment of blocks, is met by the coal-tar-distillate oils passing the Chicago specification. Crude coal tar of good quality has a higher specific gravity and is soluble in the lighter creosote oils, so that a mixture of them can be brought within the requirements of specific gravity in the specifications, but the distillation tests and the requirement that the residue after distillation to 355 deg. C. shall be waxy and not brittle and when placed on white filter paper and warmed the oil spot shall show a clear amber color, detects the mixture by the high percentage of low boiling oils or the dark or black spot made by tar in the spot test, or both.

It was discovered that a coal-tar-distillate oil meeting the original Chicago specifications could be adulterated with residues from distillation of petroleum, and for the pavement in court the specifications were modified in 1914 or 1915 in certain details of tests to prevent such adulteration. These tests did not change the general character of the original Chicago specifications, but merely made them more definite on this point, and because of them not enough petroleum residue can be used as adulterant to prevent the oil meeting the third demand, ability to diffuse through the block and absence of impurities preventing such diffusion. The two tests added were as follows:

(1) When distilled under certain specified conditions, that part of the oil which distils between 250 and 315 deg. C. must contain not less than 5 per cent of tar acids;

(2) The amount of unsaponifiable oil in the same fraction must not exceed 1½ per cent thereof.

These two tests together serve to reduce the possible adulteration with petroleum products to a minimum or prevent it altogether.

Test (1) has an additional use of great value just now, when the tar acids are being removed from coal tars for use in munitions manufacture. These tar acids are removed from the lower boiling fractions, and the total amount in the higher boiling fraction of the test is so small that it is not worth while to remove it commercially even in these strenuous times. These high boiling tar acids are among the most important toxic elements in the creosote oils, being much stronger than those in the lower boiling fractions. The specification therefore does not interfere with winning the war and at the same time it insures the supply of the very small amount of toxic ingredient necessary to make the oil a good preservative of the wood.

It was shown by the testimony that certain large supplies of coke-oven tar did not contain the necessary proportion of tar acids to meet the added test (1), but it was also shown that coal-gas tars were obtainable in sufficient amount in the open market to produce many times the amount of creosote oil necessary to meet test (1), either used alone or in mixture with tars of low tar-acid content to bring them up to the specification and test. The claim in the complaint that this test (1) produced a monopoly was therefore not allowed by the court in the decision of the case.

One claim presented in the case was that the tar-acid test and the oil as a whole could not be met and produced without infringing a patent issued to P. C. Reilly in March, 1917, although the original specification was adopted in 1912 and the modification, including the tar-acid test, was added a couple of years later. It was shown that the patent referred to covers products produced by distillation of coal tar at temperatures above 700 deg. F. (391 deg. C.) and could not in any event cover tar-acids in a fraction distilled below 700 deg. F. It was also shown that oil meeting the Chicago Speeifications could be produced readily from the products distilling below 700 deg. F., so that the oil could be made without entering the field of temperatures mentioned in the patent.

The Chicago city officials are defending their specifications because they were made as a result of great troubles with pavements constructed under a specification permitting the use of tar mixtures, and have removed those troubles. Wood block paving is now popular in Chicago, as contrasted with the demand for its abandonment in 1912 in the midst of the troubles with tar mixtures.

ESTIMATING SEWAGE FLOW FROM FLOOR AREA.*

Used in Districts Where Day or Temporary Occupants of Buildings Exceed Residents—Methods of Measuring Sewage Flow.

The usual method of estimating sewage flow on the basis of resident population is unreliable and misleading for a municipal district like that of lower Manhattan, with its tremendous daily influx of transients in the office buildings, hotels, department stores and manufacturing buildings. In certain wards the resident population is steadily decreasing, although the number of individuals in the ward during business hours probably is not. In fact, the areas where most losses in resident population occur, owing to business buildings replacing residences, are the areas in which the amount of transient population is the greatest. This transient population, especially that in hotels, contributes a material amount to the sewage of the district.

This population is dependent upon the area of floor surface occupied; that is, in the case of a building that extends full size to the roof, upon the ground space occupied by the building times the number of floors in the building. Some statistics taken by the Sewer Bureau in department stores and hotels show actual densities of daily working population in department stores varying from 865 to 2,670 per acre (including street surface), this varying with the season of the year; while in hotels the density varied from 770 to 2,630 per acre. These figures do not include the number of people shopping in department stores or those in the hotels who are not either guests or employees.

William W. Brush, in making estimates for the Catskill water supply, made an investigation from which he decided that "other things being equal, the amount of water used in any building would be dependent upon the ground area covered and the number of stories in height." He decided that the amount of water used in any building is proportional to the size and height of the same. The total floor area can readily be obtained from available atlases of the city. Meter readings of hotels and business buildings taken in 1916 show the average consumption of six of the best hotels to be 526 gallons per thousand square feet of floor area, varying from 368 to 694. Five tenement and apartment houses gave an average of

*Abstract of paper before the Municipal Engineers of the City of New York by Walter S. McGrane, assistant engineer of the Bureau of Sewers, Manhattan Borough.

230 gallons per thousand square feet, varying from 138 to 295; and five office and manufacturing buildings gave an average of 250, varying from 194 to 271. Each class of buildings gave a peak load about 25 per cent higher than the average.

In most cities, anything like accurate forecasting of consumption would be complicated by the difficulty of estimating the number of floors to which the buildings in the several districts would be carried; but New York now has zoning laws which limit the heights of buildings in the different zones, and it can be assumed as a maximum that all of the buildings in a zone will reach the maximum permissible height. In the calculation for Manhattan, the total area is reduced by 33 per cent to allow for streets, and this net area is further reduced by 15 to 30 per cent for court areas required by law. The building area thus obtained is then multiplied by the average number of floors, giving the total floor area; and this area, expressed in units of 1,000 sq. ft., is then multiplied by the constant gallons-per-day factor for the class of buildings which is expected to occupy the district in question. For convenience in sewer calculation, this is reduced to cubic feet per second per acre of total area.

Gaugings of sewage flow from typical areas were made from time to time in different parts of the city to assist in determining the factors to use in calculations of this kind. In making these sewer gaugings, various appliances were used, including floats, pitot tubes, current meter and one or two others. Mr. McGrane, who had charge of the work, decided that the float method, properly checked by pitot readings, was probably the most practical for gauging sewage flow under conditions found in Manhattan Borough. Difficulty was experienced in carrying on the work because of the presence in some sewers of great quantities of gasoline vapors, illuminating gas and steam; also, occasionally, great depth of mud near the outlets, obstructions from pipes, back-water from tides, excessive velocities, poor light, and last but not least, the influence of large house connections.

Having decided upon the point for making a gauging, the sewer was cleaned for a distance 100 feet each way from the section by the cleaning gang of the department. The distance between the centers of two manholes was accurately measured, an extension-leg level and short rod were used for running a line of levels on the sewer invert with readings at 10-foot intervals, and the cross section of the sewer at a point near each of the two manholes was measured. The party usually consisted of five men when engaged in putting floats through and six men when taking pitot readings. In the former case, one man remained on top at the up-stream manhole and two men at the bottom of this manhole, one to start the floats and the other to keep the time. At the down-stream manhole there was one man on top guarding the hole and one on the bottom to receive the floats and call out the time. While sending the floats through, the height of the sewage is taken at regular intervals, being measured down from a plank set horizontal and whose elevation is taken accurately. The surface floats used at first consisted of wooden strips 4 inches by 8 inches by ½ inch, but it was finally decided that better results were obtained by using a float to the bottom of which were nailed two tin vanes at right angles to each other and extending 3 or 4 inches at right angles to the board; the object of the vanes being to catch the maximum velocity, which was about one-fourth of the depth below the surface.

The mean velocity used in calculating volumes of flow was obtained by multiplying the float velocity by a coefficient varying from 0.75 to 0.80. To check the coefficients, a pitot tube was used, consisting of a glass tube two feet long and ½-inch in diameter, bent 45° at one end and tapered off as a cone which terminates in a small cylinder about 1/32 of an inch in diameter. The tube is set so that the lower end is horizontal and the main part of the tube makes an angle of 45° with the vertical. This position serves the purpose of exaggerating the velocity head to facilitate the accurate measurement. The combined virtues of the nozzle and standard short tube are found in the shape of the cone and tip, giving a very high coefficient of 0.98. In spite of the fact that the tip was continually clogging when immersed in the flow, this appliance gave very good results. In using the pitot tube, a frame was employed to which the tube was fastened, this frame being so constructed that it could be slid along a horizontal board set in the sewer, and the tube slid up or down along the 45° bed of the frame so that the pitot end could be brought to any part of the cross-section. The cross-section was then divided into a number of small imaginary sections of equal area and a reading taken at the center of each section. The difference between the static elevation and velocity head was measured directly from the tube.

In rating the floats, these were put through the sewer at the same time the pitot readings were being taken and for as short a distance above and below the pitot station as it was practicable to use and obtained precise velocity readings.

One of the greatest sources of error encountered in measuring sewage flow arose from the influence of house connections, especially the larger sizes. If the house connection entered above the surface of the sewage, or if the sewer section was narrow or the velocity flow more than 3 feet per second, the effect was not so marked. But when the house connections were near the flow line, the sewer section wide, and the velocity below 3 feet per second, the effect on float velocities might be considerable. In making a velocity determination, five floats were put thorough, one after the other. From a considerable number of observations it was decided that if the five floats did not vary more than 2 per cent or 3 per cent, probably no house connections were operating and the arithmetical mean was used. If one float varied 3 per cent to 6 per cent from the mean of the other four, the length of route covered by the float was assumed to be greater than the straight length of sewer by eight-thirds of the extreme variation caused by the float swinging first as far as possible to one side and then the same distance to the other side of the center line of the sewer. If the tardy float was 6 per cent to 10 per cent behind the others, sixteen-thirds of the extreme variation was added. If the tardy float was more than 10 per cent behind the others, it was discarded as an observation.

In one case a standard sharp-edge weir with a stilling-box arrangement was used and gave very accurate results; but it was concluded that placing weirs in sewers is seldom practicable, since the weir must be made water-tight and yet so constructed that it can be removed readily in case of storms in order to prevent the flooding of cellars; and it was found almost impossible to satisfy both conditions. In addition to this, the presence of the weir causes the precipitation of great quantities of solid matter behind it which tends to back up the sewage into the house connections. Attempts made to measure the sewage flow by means of a current meter were unsatisfactory, owing to the fact that suspended matter clogged the mechanism.

At the time of writing this paper, a few weeks ago, the author was experimenting with what is known as the Sanborn automatic gauge, utilizing pneumatic pressure, which had up to that time given better results than others which had been tested, although it required more or less constant attention.

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SALARIES FOR CITY MANAGERS.

We have received from H. G. Otis, the secretary-treasurer of the City Managers' Association, a list of the cities operating under this plan, giving the population of each city and salary paid, together with other information, as shown by a table published elsewhere in this issue. In this list there are classed as city managers "any person who is the administrative head of a municipality appointed by its legislative body"; this being the definition given in the by-laws of the association.

The salaries are seen to range from $900 a year for the smallest city (with a population of 500), to $10,000 a year, paid by two of the larger cities. In a general way, the salaries paid vary with the population. The writer has plotted these, using each population as an abscissa and the corresponding salary as the ordinate, in an effort to find an approximate relation between the two. In this way he obtained the formula:

$$\text{Salary} = \sqrt{1{,}000{,}000 + 500\ (\text{population})}.$$

This represents with fair accuracy the average of all the salaries. There are, of course, a few which vary considerably from this, some small cities paying large salaries (Santa Barbara, Cal., with 18,000 population, pays $7,500), and most of the salaries vary slightly from this average curve. But a more consistent relation between population and salary was found than had really been expected before beginning the analysis.

By use of this formula a city can answer the question, "What is the average salary paid to city managers by cities of our size?" Should the city feel that it desires to obtain a little better than the average qualifications in its manager, or that salaries generally are higher there than in other sections of the country, it could then add somewhat to this average; or, on the other hand, it could offer a salary lower than this if other reasons seem to indicate the desirability therefor.

In general, it is encouraging to note that the salaries run fairly high, indicating that the importance of the position is realized by the majority of cities.

GAMBLING BIDS.

We were under the impression that the evils of the unbalanced bid were so generally known and appreciated, even by the public at large, that the acceptance of such a bid in its most flagrant form was practically unknown at the present day.

The above is the opening sentence of an editorial that appeared in Municipal Journal nine years ago, called forth by the fact that Chicago had let a contract under which resurfacing was to be done at $1.75 a square yard and reconstruction at one cent a square yard. Based on the estimated quantities of the two items, this was the lowest bid; but the amounts of the two that were actually performed were such that the total cost to the city was $96,500 greater than if the next lowest bid had been accepted. This was the most flagrant case of unbalanced bidding that had come to our notice.

Another instance of a very similar unbalanced bid has recently occurred in Boston. The contract has not yet been awarded, we understand, and it is certainly to be hoped, for the credit of the city, that the unbalanced bid will not be accepted. In this case the low bidder (on the basis of the estimated quantities) offered to do one-inch resurfacing (with a surface heater, we believe) for one cent a square yard, while the average bid of the three other bidders for this item was 60 cents. If the other bids were based on a 20 per cent profit, this firm stands to lose 49c for every square yard of resurfacing it lays.

On the other principal item (relaying with 1½-inch binder and 1½-inch asphalt surface) the low bidder's offer was $1.55 and the next bidder's was $1.38. If no resurfacing be done, the cost will exceed that of the next bidder by $5,600. If the city should elect to do all of the work as resurfacing, the contractor loses $17,150. It looks like a three-to-one gamble on the part of the contractor that the city will not do any resurfacing. This firm comprises men that are not new to the business and it is not to be supposed that they are running any unnecessary risks. In fact, if such a thing were possible, we would be inclined to think that they *knew* that very little of the resurfacing would be done. At least they must be very sure of it.

It lies with certain city officials to decide how much of each item of this contract will be done. If they decide one way, the city will lose; if the other way, the contractor will lose. The Supreme Court of West Virginia decided recently that: "If the performance of the obligation of a contract furnishes temptation to use improper influence with a public official, the contract is illegal, and no right or obligation can be founded upon it." We can hardly conceive of any contract that would furnish greater "temptation to use improper influence with a public official" than this one does. It would seem that the contractor's only chance to win is to use such influence.

If the bid is a gamble between the contractor and the city, then we say the city officials have no right to gamble with the taxpayers' money. Experience should have convinced both taxpayers and officials that a city that sits in at such a game is almost invariably a loser—Chicago was a typical example.

If it is not a gamble, what is it? It certainly is not a plain business proposition. The most favorable construction that can be put upon it is that it furnishes the foundation for a continuous scrap between contractor and officials as to how much of the one-cent work shall be

done, with the moral certainty that such of it as is done will be done as cheaply and poorly as the contractor can do it.

If it is a gamble, the taxpayer loses; public business is not organized for efficiency in gambling.

If the contractor, by persuasion or other means, secures the elimination of the one-cent work, the taxpayer loses because of the higher price for the other class of work.

If a large amount of one-cent work is done, both contractor and taxpayers lose; the latter because the work done will almost certainly be worthless, for not in one case out of a thousand has it proved possible for an engineer, with the best of intentions, to secure adherence to the specifications by a contractor who is doing work at an enormous loss.

That others hold the same view is evidenced by the following resolutions passed last week by the Massachusetts Highway Association:

Resolved, That in the opinion of this association, when in competitive bids any item is offered at manifestly less than its actual cost, such bid should be rejected as "unbalanced," unfair and against the interest of the municipality.

Resolved, That in the opinion of this association, when the same person or persons are interested in two or more bids made in different names, in competition for the same work, all of such bids should be rejected as collusive and against the interests of the municipality.

The second resolution referred to a claim that a certain individual or individuals were largely interested both in the firm presenting the unbalanced bid and in one of the others bidding on the work. We need hardly say that we endorse the opinion expressed in this second resolution. Unless collusion between bidders is prevented, the bidding ceases to be competitive and leaves the way open for exorbitant charges.

Both unbalanced bids and collusion between bidders in connection with any public letting should cause all bids involved therein to be considered informal if not illegal; and the laws governing the awarding of bids by every city, county, state and other political unit should make compulsory the throwing out of every unbalanced bid and all bids in the making of which it can be shown that there was collusion.

DITCHING WITH DYNAMITE IN WET SOIL.

Not long ago it was found necessary to do considerable drainage ditching in a southern state in government work, more or less directly connected with war activities, but which we are requested not to specify more definitely. The information given below was furnished by one of the government engineers on the work.

The work referred to was greatly retarded by the fact that it has been very difficult to obtain laborers and still more so to keep them, as the work of ditching is disagreeable and labor usually deserts for more congenial work at the first opportunity; the average term of employment on the work being usually not more than one week.

This being the case, it was decided to try the use of dynamite as a substitute for hand ditching. A professional demonstrator was furnished by the Du Pont company. The first test was made on a creek straightening proposition. The channel planned was 10 feet wide on top and 4 feet deep, with banks about 1 on 1. The soil was a clayey muck filled with water.

Du Pont 60 per cent straight dynamite was used on the first trial. A double row of holes, rows 24 to 30 inches apart, with holes 24 inches apart, was loaded with two sticks of 60 per cent per hole and fired with one electric cap in the center holes, the other holes detonating by propagation. The result was more than satisfactory and indicated that more than the necessary amount of dynamite had been used. A hole 10 to 12 feet wide was cut clean and sharp, the depth being about 4 feet. The loading called for one pound of dynamite per running foot of ditch.

Another test was made with a single row of holes spaced 18 inches apart. It so happened that the section selected for this test was interlaced throughout with roots from stumps and trees, so that the result was not wholly satisfactory and another smaller charge was necessary to wholly remove the stumps and trim and straighten the edges. In clear ground (not interlaced with roots) this charge would probably be sufficient.

A third test was made on a stream fairly straight, but filled with stumps. The stream was about 8 feet wide and 18 inches deep, with 24 to 48 inches of very soft muck in the bottom. It was desired to remove the stumps and clear out the soft muck to a depth of about 36 inches.

Only 40 per cent straight du Pont dynamite was available for this work and this necessitated putting a cap in every hole, as this dynamite is not sufficiently sensitive to detonate from the explosion of other sticks in holes 18 inches to 2 feet away.

Both one and two-row loading were tried in this work. Best results were obtained with the latter method, but the softness of the material prevented the banks from holding their shape, so that the use of dynamite on such work is of doubtful utility for merely trenching work, though for stump removal it is valuable. However, the use of higher grade powder and heavier loads might produce better results.

For water-filled soils that are not too liquid, especially where trees, roots and stumps render hand work costly and slow, it is evident that the proper use of dynamite will result in a large reduction in ditching costs. For this use, 50 per cent straight or 60 per cent straight dynamite is most suitable, as it can be fired by detonation or propagation from one cap in a central hole, thus obviating the necessity of using an electrical firing machine and placing a cap in each hole. With the dynamite above specified, a fuse and cap can be used in one hole.

The cost will be considerably less in practically every case, as even in comparatively large ditches—10 to 12 feet wide on top and 3 or 4 feet deep—not more than a pound to the running foot will be needed, including the extra amount necessary for removing medium-sized stumps. Perhaps it has a greater value, however, in allowing rapid completion of work, irrespective of the labor situation.

REGULATING HIGHWAY WORK.

The state highway commission of Wisconsin has sent instructions to all county boards that decision as to what improvements they are to carry on this season must be made by the division engineers of the commission, who will meet with the county committees to discuss the matter. The object, of course, is to utilize to the greatest advantage of the state and nation at large—and at war—such money, materials and labor as are available.

HOGS AND HEALTH.

The secretary of the state board of health of North Carolina, having been asked his opinion as to the raising of hogs in populous districts, has advised strongly against it. Raising hogs on farms established some distance from the town limits is approved, but he is "not aware of the advocacy or the sanctioning of hog pens in towns or cities by health officers of any reputation whatsoever." Even under these war conditions as to food, he submits that the health of the citizens is of more importance than abundance of pork. He gives no intimation of his reasons for considering pig pens inimical to the health of neighboring residents.

The WEEK'S NEWS

Government May Maintain Military Roads—State Highway Events in Oregon and Indiana—U. S. Attacks Problem of Malnutrition—Attempt to Abolish New York Cities' Health Boards—Cleveland Opens New Filtration Plant—Regulation of Fuel Oil Sales by U. S.—Street Lighting Contract in Buffalo—Difficult Fires in Johnstown, Shamokin, Pa., New York, Jersey City, Newark and Trenton—Consolidation of State Boards in Oregon—Syracuse Garbage Plant Explodes.

ROADS AND PAVEMENTS

Proposes Federal Maintenance of Military Roads.

Washington, D. C.—If the bill introduced into the United States Senate becomes a law, the main highways of the country, including the Lincoln Highway, will be converted into military roads under government control and with the government paying part of the repair cost. The bill was introduced because of the growing realization on the part of the War Department and Congress of the destructive effect of the heavy government trucks, which in increasingly greater numbers are making use of the Lincoln Highway and other main roads in the east in the transportation of government supplies to Atlantic ports. The magnificent macadam highways of Pennsylvania were not built to take care of the type of traffic now continually flowing over them and the Lincoln Highway is suffering rapid destruction not only from the government trucks themselves, but from the commercial trucks running in increasing numbers and in accordance with the government's desire, relieving the railroads of a burden of many thousands of tons of freight. The bill which was introduced by senator J. W. Smith of Maryland provides that because of the deterioration and possible destruction of many permanently improved highways, unless unusually large expenditures are made for their maintenance and repair, due to the government army trucks, the Secretary of War after an investigation of the facts shall on petition of a state highway commission, declare such roads as military roads, and the government shall then contribute in suitable installments its portion of the funds necessary to maintain these highways in good condition. This money which will be available should the bill become an act will be in addition to the Federal Aid provided by the Bankhead-Shackleford Act.

Oregon Spends More Than a Million on Roads.

Salem, Ore.—The state highway commission has announced that from December 1, 1916, to March 1, 1918, the commission expended $1,049,250.30. Of this amount $65,391.59 was for administration, $83,942.78 for equipment and $899,916.13 for construction, maintenance and surveys. Under the head of administration is embraced the following charges: Commission, $2,686.61; auditing, $6,356.74; highway department, $22,708; bridge department, $33,639.24. The amount disbursed for construction was approximately $768,000 and for surveys $130,000. The principal expenditures were as follows: Columbia river highway, $326,900; Pacific highway, $121,786; John Day highway, $37,600; Oregon-Washington highway (Umatilla county), $159,467; Rex Tigard, $98,714; The Dalles-California highway, $19,787; McMinnville-Tillamook highway, $27,204.

State Argues for Validity of Highway Law.

Indianapolis, Ind.—Attorney-general Stansbury has been in Noblesville, where he made an argument in support of the constitutionality of the state highway law enacted by the 1917 legislature. The law is attacked in a complaint filed some time ago by Robert M. House, a taxpayer. The state filed a demurrer, and the argument was on the demurrer. The litigation over the highway law is said to be one of the most important in the state pending at this time because of the large amount of money and large number of proposed improvements involved. About 800 miles of road have been projected under the law at a cost of many millions. The law was enacted so that Indiana could comply with the conditions under which federal aid would be granted under the law enacted by congress in 1916. The state act provides a levy, creates taxing districts and creates a state highway commission. The state highway commission is authorized to designate "main market highways." The cost of improvement is to be divided, one-half to be paid by the county or district, one-fourth by the state and one-fourth by the federal government. To get federal money for a road at least 70 per cent. of the road must be used by the rural postal service. Should the state law be overthrown the state would be deprived of federal aid, at any rate for the present. The complaint denies the power of the legislature to levy a tax and create taxing districts in the way followed in the statute.

SEWERAGE AND SANITATION

U. S. to Cooperate with Cities on Malnutrition.

Washington, D. C.—Secretary McAdoo announces that as a result of studies by the United States Public Health Service of the causes for rejections for physical defects under the selective draft law, it has been established that malnutrition during childhood is one of the avoidable troubles. The service is now considering a national program of cooperation with state, county and municipal health authorities for the purpose of safeguarding the health of school children. The public health service has been engaged for some years now in collecting valuable data as to the state of nutrition and mental and physical health of school children. An official statement says: "In view of the increasing economic stress occasioned by the war at least one valuable means for enabling the rising generaton to pass unscathed through this period consists in taking steps to see that school children are provided at midday with a warm, properly balanced meal. The value of the school luncheon consisting of properly balance articles of diet furnished to school children either at cost or somewhat below cost, has long been recognized as a valuable means for promoting healthy growth and development. The rising cost of living and lack of general knowledge of healthful substitutes for valuable articles of food, which are steadily becoming scarcer, emphasizes at this time the necessity for making provision by health authorities of hot, nutritious meals for school children during the noon hour."

Cities Stop Plan to Abolish Health Boards.

Albany, N. Y.—An attempt to put through the legislature a law which would abolish city health departments has been discovered, and through the efforts of the cities of the state, led by Buffalo, Rochester, Syracuse and Schenectady and the mayors' conference, the danger has been warded off. Hearings were postponed and the bill then withdrawn when the cities protested that their health progress would be put back by such a violation of home rule principles. In effect, the Whitney bill would eliminate all existing boards of health and health officers and centralize all authority in the state health commissioner, to be exercised through appointive county boards of managers responsible only to the commissioner. The city health bureaus, the present management of the tuberculosis sanatoria, laboratories, etc., would go. The boards of supervisors would be given power to establish each county as a separate health district, to appoint a county board of

health of seven unpaid members for terms of six years and delegate to the board all powers and duties of present health boards and health officers. One member of the board must be a lawyer, one a physician and one a graduate civil engineer. "Upon the appointment of a county board of health," says the bill, "all local boards within the county and the offices of local health officers shall cease and the new board shall determine upon the appointment of a county health officer, appointed by the county board and not a member of it. He shall be paid not less than $3,000 a year, shall hold office during good behavior and shall have all the powers of local health officers. The county health officer may divide the county into sanitary districts, alter them at will, appoint deputies and fix their salaries and appoint sanitary inspectors, public health nurses and similar assistants." In addition, "the board of supervisors may determine that there shall be a public hospital with separate wards or buildings for the care of tuberculosis, contagious and social diseases, and dispensaries for three separate purposes. It may name a board of managers of five, for terms of five years, to build and conduct such a hospital, which takes the place of any tuberculosis hospital in existence."

Officials Arrested for Stream Pollution by City.

Hillsboro, Tex.—The mayor and aldermen were recently arrested, under grand jury indictments charging pollution of streams under an act passed by the Legislature in 1913 governing the emptying of sewage into any river or its tributary. This is said to be the first criminal prosecution in the state under the law, which allowed cities three years in which to comply with the requirements of the law. Hillsboro has already taken the first steps to remedy the defects in its sewage disposal plant through an election increasing the bonding limit of the city. An election for bonds is contemplated.

Another City Joins Passaic Valley Sewer.

East Orange, N. J.—Deciding to make a deal with Newark to pay $825,000 now and $150,000 twenty years after the Passaic Valley trunk sewer is in operation, meanwhile contributing an estimated $11,000 a year for maintenance, East Orange has solved its long-standing sewerage problem. It will be permitted to use the big flume at a cost approximately $100,000 higher than it might have done two years ago, when mayor Worrall F. Mountain obtained an order from Newark for an initial price of $725,000. One-half of the $825,000 is to be paid within ninety days of the making of the deal and the remainder when the trunk sewer is in operation. The $150,000 is the estimated share of East Orange in the high level sewer which will be necessary to meet future needs in the Roseville section, and which could have been accommodated without extra expense if East Orange were not taken into the trunk sewer. About five years ago a special sewer committee reported that it would have cost East Orange $1,016,000 to share in the trunk sewer on the terms offered in the apportionment of cost on the basis of tax ratables. Independent sewage disposal by means of the Imhoff tank, which East Orange has been striving for during the past ten years, was put at an initial cost of about $600,000, but objections that the proposed plant for that purpose in the Soho section would be a nuisance, as well as the uncertainty of the method's success, deterred East Orange from making a deal jointly with Montclair and Glen Ridge. The agreement, as contemplated, provides that the city shall dispose of East Orange sewage up to 10,000,000 gallons a day for the twenty-year period and 14,000,000 gallons after that. This city now is under contract to take up to 4,000,000 gallons daily, a figure which is frequently exceeded, according to claims that have been made by the local officials. The existing arrangement, which was made twenty-four years ago, permits East Orange to deliver its sewage at the municipal line to a main specially constructed from that point to the Passaic river. The prospective agreement was to a great extent helped, it is stated, by the fact that the privilege given East Orange in perpetuity, before the intercepting sewer was thought of, constituted a valuable asset.

WATER SUPPLY

To Use Day Labor on Hetch-Hetchy Work.

San Francisco, Cal.—The board of supervisors has appropriated $250,000 for work on Hetch-Hetchy other than by formal contract. City engineer M. M. O'Shaughnessy stated that this sum is for work to be done by day labor where bids are considered to be too high. The board of works has found an ordinance under authority of which it is possible to make purchases without contracts. Questioning the city engineer for his authority for going ahead with work by day labor without contracts and asking president Reardon of the board of public works by what right a locomotive had been bought in the open market for $24,100, chairman Wolfe was informed that an ordinance passed by the board of supervisors provides that after bids on Hetch-Hetchy materials and equipment have been duly received and rejected for proper reasons the board of public works may buy in the open market. O'Shaughnessy said he asked for the $250,000 in order that work might go on. He explained that $9,000,000 was the lowest bid for tunnel work which he had estimated at $6,000,000, and that by doing the work by day labor the cost had been kept within the original estimate. He added that the lowest bid for 2,000 poles needed had been $6 a pole, but that cut by day's work the poles had cost $2 apiece.

Water Plants Pay for Excess Diversion.

Trenton, N. J.—Nine municipalities, eleven water companies and two manufacturing concerns will be required to pay amounts aggregating $19,766.66 this year for excess water diverted under the provisions of the act passed in 1907. The act imposes a charge of $1 per million gallons for all water in excess of that authorized in the act. The excess diversion for the past year, amounting to nearly 20,000,000,000 gallons, has been fixed by the State Department on Conservation and Development and certified to the state controller.

Mayor a Strikebreaker in Waterworks Strike.

Great Falls, Mont.—Four men, all of them city officials, furnished the service at the city water filtration plant as the result of a strike by the engineers at the plant. Mayor Fousek and superintendent M. L. Morris worked on the night shift and city engineer L. B. Evensen and assistant city engineer A. E. Coonrod attended to the day shift.

Cleveland's New Filtration Plant in Operation.

Cleveland, O.—About half the city, for the first time in its history, is now being served with filtered water, a large part of the new West Side filtration plant, which has cost $3,500,000, having been put into operation. Fifty million gallons a day are being served. This will give filtered water to the entire districts known as the west side low service and east side and west side first high service. This territory includes the whole west side and the entire southeast side of the city. It also embraces the city of Lakewood, part of East Cleveland, and the villages of Brooklyn Heights, Cleveland Heights, Rockport, part of South Newburg and Newburg Heights. Public utilities director Farrell and water commissioner Martin, in announcing the beginning of operations of the filter plant on a large scale, anticipated that by April 15 every consumer supplied by the city would be given filtered water. The filtration plant began to operate experimentally early last November, since which time a daily output of 8,000,000 gallons of filtered water has been maintained. Because this was only a small part of the entire quantity consumed daily, it was mixed in the mains with the "raw water." Director Farrell said the 50,000,000-gallon a day rate of filtration will be increased gradually. Within a month, he said, he expects the output to be doubled, allowing practically city-wide distribution. "The total capacity of the plant, as estimated by engineers concerned in its erection, is declared to be 150,000,000 gallons a day, with an extreme limit of 160,000,000 gallons," the director said. "We consider it inadvisable,

however, to greatly tax the plant, because of defects found in the construction, until we have assured ourselves by actual test whether repairs have completely overcome the building faults." Water department officials estimated that the maximum daily consumption of water in all communities supplied by the city will not exceed 135,000,000 gallons in midsummer—the "peak season" for water use. They said of this capacity cannot be reached when the filtration plant is put in full operation, a small percentage of "raw water" may have to be mixed into the mains supplying a small isolated district.

The original cost of the filtration plant, erection of which was started under a previous administration, was estimated at $2,500,000. "Serious defects in the construction soon appeared, however. So far, approximately $700,000 additional has been expended to remedy these conditions and $300,000 more probably will be required to complete the repairs. The original defect discovered was in what is known as the clear water basin or reservoir out of which the filtered water is pumped. Gross faulty workmanship and poor material, it was found, had entered into the construction of this part of the plant, which, unless corrected, would have rendered its operation impossible. Subsequently, it was found that in the filter plant proper the building containing the coagulating basin was gradually slipping towards the lake, because the foundation had been built without proper piling on ground immediately above large deposits of peat and other boggy substances which gave way under the pressure of the building. By driving a large number of piles, our engineers believe the effect of this defect has been overcome."

STREET LIGHTING AND POWER

Priority in Fuel Oil Sales.

Washington, D. C.—Revised regulations for the distribution of fuel oil in the United States east of the Rocky Mountains have been issued by the Fuel Administrator with the authorization of President Wilson. Under a proclamation of the President, dated Jan. 31, all manufacturers and distributors of fuel oil, including gas oil, whose gross sales aggregate 100,000 barrels a year, were required to obtain a license by Feb. 11. The rules governing these licenses have now been revised because it has been found that distributors controlling only small supplies of fuel oil were frequently unable to meet the requirements of all of their customers. The situation worked a hardship to the customers of the small distributors and deprived essential industries of oil. Under the new regulations if a distributor is unable to meet the requirements of all his preferred customers another distributor may be required by the Fuel Administration to meet this demand before he is allowed to supply his own customers who are not on the preferred list. Twelve classes are put on the preferred list, and manufacturers and distributors are required to give priority in the distribution of fuel oil to them in the order in which they are named. They are:

1. Railroads, bunker fuel and oil refineries using or making fuel oil.
2. Export deliveries or shipments for the United States Army or Navy.
3. Export shipments for the navies and other war purposes of the Allies.
4. Hospitals in which oil is now being used as fuel.
5. Public utilities and domestic consumers now using fuel oil (including gas oil).
6. Shipyards engaged in Government work.
7. Navy yards.
8. Arsenals.
9. Plants engaged in the manufacture, production and storage of food products.
10. Army and navy cantonments where oil is now used as fuel.
11. Industrial consumers engaged in the manufacture of munitions and other articles under Government orders.
12. All other classes.

Deliveries must be made in conformity with this list regardless of existing contracts between licensees and consumers in other classes. After the requirements of consumers entitled to priority are satisfied, licensees must carry out their contracts for other deliveries to the extent of their supplies.

In promulgating the new regulations for the distribution of fuel oil President Wilson made this statement concerning the need of conservation: "The rules and regulations are promulgated by the President acting through the United States Fuel Administration for the purpose of assuring an adequate supply and equitable distribution of fuel oil for the purposes vitally essential to the national security and defense and to the successful prosecution of the war. The shortage in the amount of fuel oil which can be delivered because of transportation conditions is such that it is clearly a wasteful and unreasonable practice to deliver such fuel oil for purposes which are not intimately and directly connected with the prosecution of the war."

Municipal Ownership Disapproved.

Ladysmith, Wis.—The voters have defeated the proposition that the city assume ownership of the local light plant. The vote was 257 against 157 in favor.

New Contract for Street Lighting.

Buffalo, N. Y.—The city council has directed the commissioner of public works to contract with the Welsbach Street Lighting Company of America "for furnishing and equipping 2,000 or more street lamp posts with 60.150 candlepower incandescent mantle gas lamp heads complete of boulevard or ornamental type with either upright or inverted mantles where gas mains now exist or may hereafter be laid, for furnishing all other material, labor and equipment (except posts, gas service, and riser pipes and gas) for lighting, extinguishing, cleaning and keeping in repair such lamps for a period of five years from March, 1918, to March, 1923, also for furnishing street lamp posts equipped with 40 candle power incandescent mantle naphtha or hydro-carbon lamp heads of the boulevard type and all labor and material necessary for the installation and maintenance of same and for lighting, extinguishing, cleaning and repairing all such lamps." The rules are as follows:

For present number of gas lamps approximately 9,500, and as many more as may be required and ordered.

For the boulevard type 60 candle power lamps at 3 9-16 cents per lamp per night or the ornamental type 150 candle power lamps at 4⅝ cents per lamp per night.

Should the number required be between 7,500 and 9,500, these rates are increased respectively by 1-16 cent. and similar increases are provided should the number be between 5,000 and 7,500 and further increases if the lamps number 2,000 to 5,000.

For the present type of naphtha boulevard lamps 15½ cents per lamp per night.

With a reduction in the price of naphtha lamps at the rate of $1.01 per lamp per year for each one cent reduction in the average monthly cost to said company per gallon below said base price, settlements hereunder to be computed accordingly and allowance to be made monthly for amount due during the last preceding calendar month.

South American Government Buys Local Utilities.

Montevideo, Uruguay.—The Uruguayan government has purchased for the sum of 100,000 pesos ($103,420) the electric plant at Mercedes, Uruguay, from a private company. The plant will in the future be operated by the administration of state electric plants (Administración General de las Usinas Eléctricas del Estado), with headquarters at Montevideo. The government already owns and operates the electric plants at Montevideo, Colonia, Canèlones, Maldonado and Pando.

FIRE AND POLICE

City Threatened by $1,000,000 Blaze.

Johnstown, Pa.—A million dollar fire of unknown origin destroyed five buildings entirely, damaged several others, rendered scores of families homeless, put scores of firms out of their business places, resulted in the injury of a dozen or more firemen, crippled the trolley service for one-half day, and for a time threatened the business section of Johnstown. The absence of a high wind saved the greater portion of Johnstown from destruction. As it was, a light breeze carried burning embers and started fires in awnings and on roofs over an area covering several blocks in the heart of the city and as far as Woodvale, nearly a half mile distant. Rush calls for outside assistance brought the automobile chemical trucks and crews from Conemaugh, Franklin, Dale, Westmont and Windber. The visiting firemen did excellent work. Several of the Franklin

boys were injured in fighting the fire. No one was seriously injured, although there were many narrow escapes. Dynamite was resorted to in bringing down the dangerous walls remaining of one of the buildings. The concussion of two heavy blasts broke scores of windows that had not been broken by the heat of the flames. A portion of a front wall fell across the automobile truck of Engine Company No. 1, crushing it to the street. Firemen and others had narrow escapes from being killed or dangerously injured. The pumper was the biggest and best of the fire department, representing a value of about $9,000. Electric current was shut off at the power plant to prevent electrocutions from trolley, telephone and electric light wires that had been torn down. Gas was also turned off wherever possible to prevent explosions and asphyxiations.

Blaze Spreads While Firemen Dispute.

Shamokin, Pa.—While firemen were contending for possession of a plug, it is alleged, a fire of a trivial nature was permitted to gain such headway as to burn out the tops of a row of four houses, rendering a like number of families homeless. The loss to the property reached several thousand dollars. The municipal authorities are investigating.

Four Firemen Injured in Lumber Blaze.

New York, N. Y.—A lumber yard fire which caused damage amounting to $50,000 lasted for several hours and was extinguished only after thirty pieces of apparatus assisted by five fireboats were brought upon the scene to combat the flames. Four firemen were injured, two being buried under a pile of fallen timber. They were dug out by their companions. Two others were cut on the arms and legs in trying to tear their way through blazing timber. The fire began to spread to other buildings, which, however, were saved. The firemen struck a difficult snag in one spot in the lumber yard, where the timber was piled many feet high. It was necessary to pull these piles down in order to get them out of the way of the flames. Lieutenant Seyforth was directing a squad of firemen in this work when a pile tumbled down on top of them.

Big Explosions Rock Cities.

Jersey City, N. J.—Jersey City and the metropolitan area were rocked by a series of explosions resulting from the burning of a five-story warehouse of the Jarvis Warehouse Co., Inc., which occupied nearly four blocks in Jersey City, within about 500 feet of the Hudson river, nearly opposite the New York city hall. The explosion deluged the Erie Railroad yards and machine shops, which adjoined them, with burning brands starting fires that destroyed two of the Erie shops, damaged or destroyed twenty locomotives and a large number of freight cars loaded with merchandise. Burning fragments, blown across the Hudson river, started small fires on the waterfront on the New York side. Over an area about half a mile in diameter about the plant in Jersey City, the streets were filled with broken window glass. The shock of the explosion was felt in office buildings in lower Manhattan and windows were shaken as if artillery was being fired in the streets below. A second explosion rattled windows again and swept the vast column of smoke over lower Manhattan and New York harbor. Several smaller explosions followed. Notwithstanding the great fire and explosion, and the fact that it did damage of more than $2,000,000, not a life was lost and not a person was even badly hurt. Mayor Frank Hague was at first convinced that the fire which caused the explosions was set by German agents, who wished to destroy Government stores in the Jarvis warehouse. Since the Black Tom explosion, Jersey City had adopted an ordinance forbidding the storing of high explosives within the city limits. The military authorities have respected this law, and high explosives, which were formerly loaded from Black Tom and other points near Jersey City, are now loaded at Perth Amboy and sent by barges between Staten Island and the Jersey shore to the outside of the harbor. E. J. Jarvis, secretary and treasurer of the warehouse company, insisted that there was not an ounce of high explosive in the warehouse. Officials of the Quartermaster's Department said they had no information of any explosives for this Government being in the warehouse. The tremendous propelling force of the explosion seemed to be directed eastward, for while hundreds of tons of burning materials from the interior of the building were scattered over the Erie yards comparatively little damage, except the breaking of glass, was done to the buildings lying inland from the warehouse. The office force of twenty-five persons heard the alarm and ran out of the warehouse in time to escape the explosion, and the foreman in charge of the workmen said that all of his hands, most of whom had been loading and unloading motor trucks, had been warned in time to get away and had been accounted for. Burning timbers, flung by the explosion from the interior of the building, fell on the Erie tracks 500 yards from the warehouse. The roofs of two great machine shops were loaded with burning debris. Several hundred persons were at work in the shops. Erie officials estimated the damage to the company at $1,000,000. The destruction of the Jarvis building involves loss, including the structure and contents, of more than $1,000,000. Goods stored there belonged to the War Department, to the Allies, and to private customers. No one was hurt except a few persons who had suffered slight lacerations from flying glass in the streets near the explosion.

Investigation finally developed that the explosions had been caused by a workman who threw a lighted cigarette on the floor while he and other workmen were weighing out loose chlorate of potash in the warehouse. The men had been told that the chemical was not explosive. One man dropped a cigarette butt and stepped on it, but the floor was covered with chemical dust which ignited and the fire spread rapidly. The men ran and then the explosions occurred. The defense of the officials of the companies storing, buying and selling the material, who were accused of violating the law by storing explosives in Jersey City, is fundamentally that they did not think chlorate of potash would explode. Inspector Tunney, who investigated the explosion, said that explosions of chlorate of potash had occurred before, and that the substance, while not explosive in itself, was capable of forming a combination very rapidly, which might produce a tremendously powerful explosion. This explosion was one of the "telescope" type, in which a small blast produces a larger one and so on in a series of explosions of increasing violence until the explosive substance is exhausted.

Chemical Plant Fire Draws All Apparatus.

Newark, N. J.—A fire in the chemical buildings of a plant which makes picric acid and other chemicals used in the making of munitions for the government called out all the fire apparatus in Newark. When the fire was discovered by watchmen in one of the large buildings of a system of forty structures put up within the last few months an alarm for all apparatus was sent in because the plant fronts on Newark Bay, near several other munitions factories, and only about a half mile from the shipyard of the Submarine Boat Corporation, where thirty ships are under construction for the emergency fleet. When the flames were seen by the soldiers in the new system of warehouses at the shipping base of the Army Quartermaster Corps near the shipyard a detachment of soldiers was sent to the fire by Major F. H. Maphier to investigate, and to give any possible aid to the men fighting the fire. The apparatus had difficulty in reaching the fire because of the condition of the roads. The firemen, with squads of men from other factories, had difficulty in fighting the flames because of the fumes given off as they reached the vats.

Chief Suspended for Altercation.

Trenton, N. J.—Found guilty by director of public safety La Barre of three charges preferred against him by a storekeeper, chief Bennett of the fire department was suspended for five days without pay. The charges followed occurrences at a fire at the storekeeper's establishment last month. Chief Bennett was charged with using profane language, engaging in an altercation with Betor, the merchant, and with conduct unbecoming an officer and prejudicial to the conduct of the fire department. The chief entered pleas of not guilty to the charges. According to Betor, he was unaware that water pipes in his store were frozen at the time he built a fire in a range. This resulted in an ex-

plosion, which, according to witnesses, practically wrecked a portion of the structure and endangered the lives of Betor's brother, a woman and her child, sleeping on the second floor. Betor claimed chief Bennett swore at him, struck him and took him by the arm and led him to a patrolman, requesting that he be locked up. Chief Bennett denied having struck Betor, but said he put up his arm in self defense, Betor telling him as owner of the place he had a right there and that he was not afraid of the chief of the fire department. While chief Bennett denied using profanity toward the complainant, he admitted using certain words while in conversation with Betor which were classed as profanity. Chief Bennett maintained that his object in questioning Betor was to ascertain if he knew the water pipes were frozen at the time he started the fire, while Betor's interpretation of the language was that he was being accused of setting the place on fire. Chief Bennett has been a member of the department 26 years and this was the first time he had been before his superiors on charges of any nature.

GOVERNMENT AND FINANCE

Commission Form Defeated.

Burlington, N. J.—Commission form of government has been defeated here by a majority of 180 votes out of the 614 cast. About one-third of the voters took interest in the election.

Consolidation of State Boards Recommended.

Salem, Ore.—Besides recommending a number of mergers of state departments, the executive committee of the state consolidation commission in a report prepared for submission to the commission, excoriates the forestry department for playing politics, scores the industrial accident commission for employing "cheap help," pronounces the bookkeeping methods of Secretary of State Olcott "antiquated," and suggests that the commission probe carefully into the expenditures of several other state departments and boards. The consolidations recommended are: Food and dairy commissioner with the livestock sanitary board. Social hygiene society with the state board of health. Industrial welfare commission and board of child labor inspectors with the labor commissioner. Corporation commissioner with the state banking department. State sealer of weights and measures with the public service commission. Tax commission with the public service commission. State water board and desert land boards with state engineer's office or with state land board. "Oregon is the only state having such a commission, and it is a fad," continues the report in recommending a merging of the social hygiene society with the state board of health. "It is good for enthusiasts to work on, but not for a state, at least, in the manner in which it is being done." Advocating the combining of the office of state sealer of weights and measures with the public service commission the committee declares that this office was originally consolidated with the state treasurer's department. While admitting that the corporation department is conducted "apparently economically," the committee expresses the opinion that it is possible, by merging it with the banking department, "to save expense and salaries without loss and a possible increase of efficiency." It is estimated that a saving of $7,000 a year could be made by the consolidation. The reason given for recommending the merging of the tax commission with the public service commission is that the latter makes valuations of public service corporations, and that the equalization of taxes could be performed by a special deputy. The saving by a merger would total $4,000, it is asserted. Speaking of the water board, the committee states, "There is no doubt that this is one of the most extravagant offices of any of the boards," and it declares that "it is absolutely a farce to have officials of this character elected." They should be appointed, it is declared, as the "general public in voting does not know what this office means, and, with few exceptions, knows anything of the man." A consolidation of this board and the desert land board with the state engineer's office, would effect a saving of $8,000 annually, it is contended. The committee recommends a probe of the state land board, saying "a great deal of back interest, some dating for years, has been allowed to accumulate, endangering the securities held."

STREET CLEANING AND REFUSE DISPOSAL

To Fine Ash Hauling Company.

Indianapolis, Ind.—The board of public works has lost its patience with the Indianapolis Hauling Company and adopted a resolution providing that the company be penalized from $1 to $5 for each violation of the company's ash hauling contract with the city. The order became effective at once. "Under the terms of the contract," said George Lemaux, member of the board, "the board will rescind the contract if you do not give the city relief." Deluges of complaints have swamped the board of public works since December. On account of the heavy snowfall, however, the board did not feel justified in penalizing the company until weather conditions improved. Later the board put twenty city teams at work hauling ashes and charged the cost—approximately $900—to the hauling company. After this the company represented that it could take care of the work properly, and the city teams were taken off. The complaints continued to come in, however, and investigation by the board disclosed that ashes were not being hauled in accordance with the terms of the contract. The excuse of the company is that people do not put their ashes in closed containers so the ashes may be kept dry. Members of the board, however, say people have to fill up boxes, tubs, cans and every other kind of receptacles to hold ashes because the company fails to make calls every week. The company also was ordered to haul away ashes which have been dumped in alleys.

Explosion in Garbage Reduction Plant.

Syracuse, N. Y.—A mysterious explosion in one of the big steam digestors in which raw garbage is cooked partly wrecked the municipal garbage reduction plant. Six city employes, who were in the building, escaped without serious injury, although one of them was stunned by the concussion. The blast ripped away the brick walls and roof of one wing of the plant and hurled a three-ton boiler several hundred feet into the adjoining marsh. The digestor, a huge piece of apparatus weighing several tons, was shattered into fragments. The damage, according to Richard B. Williams, Jr., commissioner of public works, will run between $40,000 and $50,000. The plant was shut down and may not be rebuilt. Its capacity is limited and the city has made plans for replacing it with a modern plant as soon as the project could be financed. "The plant is not totally wrecked, but it will be impossible to operate it for some time," said commissioner Williams. "We are unable to determine yet what caused the explosion. The digestors are full of steam but there is a safety appliance which keeps the pressure below eighty pounds. Gases of some sort may have been generated from unusual substances in the garbage. Similar accidents have occurred in other plants. A tank containing 2,000 gallons of gasoline was almost under the explosion, but was not damaged. Philip Stark, plant superintendent, was able to prevent a disastrous fire by prompt and effective measures as soon as workmen could approach the buildings." The plant is owned by a referee in bankruptcy in charge of the affairs of the Syracuse Reduction and Manufacturing Company. It has been operated by the city under an agreement with the trustee since November, and extensive improvements have been made under municipal supervision.

Flying debris from the walls and roof cut through power and lighting wires of the Syracuse Lighting Company, including a high-tension cable reaching from the city to South Bay. Power was shut off on all of them to prevent accident immediately after the explosion. No fire followed it, probably because of the brick construction of the wing in which the digestors were placed. Fires were drawn from the boilers. The digestors were in a brick walled addition to the main plant, occupying the second of the three floors.

NEWS OF THE SOCIETIES

CALENDAR OF MEETINGS.

April 15, 16.—SOUTHWESTERN ELECTRICAL AND GAS ASSOCIATION. Annual convention, Galveston, Tex. Secretary, H. S. Cooper, Dallas, Tex.

April 15-17.—UNITED STATES GOOD ROADS ASSOCIATION. Annual convention, Little Rock, Ark. Secretary, J. A. Rountree, 1021 Brown-Marx Bldg., Birmingham, Ala.

April 18-19.—BANKHEAD NATIONAL HIGHWAY ASSOCIATION. Annual meeting, Little Rock, Ark. Secretary, J. A. Rountree, 1021 Brown-Marx Bldg., Birmingham, Ala.

April 18-20.—SOUTHWESTERN SOCIETY OF ENGINEERS. Annual convention, Douglas, Bisbee and Tucson, Ariz. Secretary, C. E. Barglebaugh, El Paso, Tex.

April 23-24.—LEVEE AND DRAINAGE CONTRACTORS' ASSOCIATION OF THE UNITED STATES. Conference, St. Louis, Mo. Secretary-treasurer, C. S. Gannon, 421 National Bank of Commerce Bldg., St. Louis, Mo.

April 23-26.—SOUTHWESTERN WATER WORKS ASSOCIATION. Seventh annual convention, Tulsa, Okla. Secretary-treasurer, E. L. Fulkerson, Waco, Tex.

May 13-17.—AMERICAN WATER WORKS ASSOCIATION. Annual convention, St. Louis, Mo. Secretary, J. M. Diven, 47 State street, Troy, N. Y.

May 21-23.—ARKANSAS ASSOCIATION OF PUBLIC UTILITY OPERATORS. Annual convention, Hot Springs, Ark.

June 4-7.—AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Spring meeting, Worcester, Mass.

June 24-26.—AMERICAN CONCRETE INSTITUTE. Annual meeting, Atlantic City, N. J.

June 25-28.—AMERICAN SOCIETY FOR TESTING MATERIALS. Annual meeting, Atlantic City, N. J. Secretary-treasurer, Edgar Marburg, University of Pennsylvania, Philadelphia, Pa.

June 26-28.—AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS. Annual convention, Atlantic City, N. J. Secretary, F. L. Hutchinson, 33 West 39th St., New York City.

American Institute of Electrical Engineers.

A tentative program for five technical sessions has been prepared for an annual convention of the American Institute of Electrical Engineers which is to be held in Atlantic City on June 26, 27 and 28.

This tentative program was determined upon by the committee on meetings and papers at its meeting in Cleveland. The following papers will be presented if they are submitted and accepted by the committee on April 25:

Wednesday, June 26, 2.30 p. m.—W. H. Cole, "Split-Conductor Cables—Balanced Protection"; E. B. Meyer, "Overhead Cables"; H. H. Cochrane, "Wood-Stick Insulators"; G. I. Gilchrist, "The Applications of Theory and Practice of Transmission Systems."

Thursday, June 27, 10.30 a. m.—C. T. Allcutt, "Lightning-Arrester Spark Gaps"; C. P. Steinmetz, "Oxide-Film Lightning Arrester."

Thursday, June 27, 8.30 p. m.—E. Kilburne Scott, "Nitrogen Fixation"; C. P. Steinmetz, "America's Power Supply"; D. C. Jackson and N. W. Alexander, "Education."

Friday, June 28, 10.30 a. m.—V. Karapetoff, "Charged Condensers"; C. L. Fortescue, "Method of Symmetrical Coordinates Applied to the Solution of Polyphase Network"; N. S. Diamant, "Flux Distribution in Alternators Under Sustained Short-Circuit Conditions and Different Loads."

Friday, June 28, 2.30 p. m.—J. J. Linebaugh and J. L. Burnham, "Protection from Flashing for Direct-Current Apparatus"; H. S. Osborne, "The Design of Transformers for Parallel Telephone and Power Circuits."

The meeting will open at 10.30 a. m. on Wednesday, June 26, with an address by the president, and an informal reception will be held at the Marlborough-Blenheim Hotel at 8.30 the same evening.

The committee on meetings and papers has approved a proposal to recommend to the board of directors to hold a joint technical session with the American Physical Society at the annual fall meeting at Philadelphia in October.

The directors of the institute have nominated the following members to be officers for the coming year: President, Prof. Comfort A. Adams, cambridge, Mass.; vice-presidents, William B. Jackson, Chicago; Harold Pender, Philadelphia; John B. Taylor, Schenectady; F. B. Jewett, New York; Allen H. Babcock, San Francisco, and Raymond S. Kelsch, Montreal; managers—Frank D. Newbury, Pittsburgh; G. Faccioli, Pittsfield; Walter I. Schlichter, New York; treasurer, George A. Hamilton, Elizabeth, N. J. These nominations are practically certain elections.

Prof. Adams has been since 1914 professor of engineering at Harvard and the Massachusetts Institute of Technology and consulting engineer to a number of large corporations.

Minnesota Electrical Association.

The annual convention of the Minnesota Electrical Association, held at Minneapolis on March 11, 12 and 13, was a war meeting. The attendance was greater than it had been at any previous meeting.

President F. A. Otto of Albert Lea said that "the abnormal conditions caused by the war made it more necessary than ever to get members together for their mutual co-operation in maintaining the central-station industry at maximum efficiency." President Otto recommended that a fuel committee be appointed with the following objects: 1. To make a survey of the coal situation in the State as it affects public utilities. By this is meant to ascertain the amount of coal consumed annually by the public utilities and the monthly consumption, and to ascertain how much coal can be stored by each utility. This will show how much coal must be transported. 2. To co-operate with the State Fuel Administrator to secure the necessary supply of coal and to co-operate with railroad operators to keep coal moving regularly. 3. To give special assistance to association members who have difficulty in getting a sufficient supply of fuel.

S. B. Hood, superintendent of construction Northern States Power Company, read a paper on proper grouping of transformers in an interconnected secondary network. He presented a method of increasing the possible load a given distribution system can carry.

George A. Hughes, president Edison Electric Appliance Company, delivered an address on electricity as a means for conservation of labor.

Other papers presented were: "Maintenance of Electric Meters," by George Hewitt, Minneapolis; "Iron Wire Transmission Lines," Prof. W. T. Ryan, Minneapolis, and "Minnesota Water Powers," R. D. Thomas, St. Anthony Water Power Company, St. Anthony Falls.

Officers for the coming year were elected as follows: President, B. W. Cowperthwait, Faribault; vice-president, H. E. Swanson, Rochester; secretary, Fred C. Hoffman, St. Paul; directors, Emil Aveldson, supt. of the municipal electric light plant of Litchfield, and H. E. Young, Minneapolis.

New York State Conference of Mayors and Other City Officials.

Closer co-operation between the state and cities, if the state is to do its utmost in the war, was the keynote of the war meeting of the State Conference of Mayors, which met in Albany.

Governor Whitman and other state officials outlined to the city officials the methods by which they can best assist the state and national government. Mayor Burns, of Troy, president of the state conference of mayors, presided at the conference and outlined its purpose.

The first speaker was Walter H. Knapp, president of the State Tax Commission, who spoke on "City Tax Problems During War Times." "What Shall Be the Policy of the State and Its Cities Relative to Public Improvements?" was the topic taken up by Edwin Duffey, state commissioner of highways. The limitation of the use of labor and material to such a point as not to interfere with war preparations was advocated. Dr. Herman M. Biggs, state health commissioner, addressed the conference on "What Can the City Do for Health Conservation During War Times?" and H. F. Babcock, director of the bureau of food conservation spoke on "Municipal Food Campaigns."

In the afternoon in addition to Governor Whitman, who spoke on "The State and Its Municipalities During War Times," adjutant general Sherrill and state food commissioner John Mitchell spoke. Adjutant General Sherrill discussed the assistance the cities may give the military and commissioner Mitchell food production and distribution.

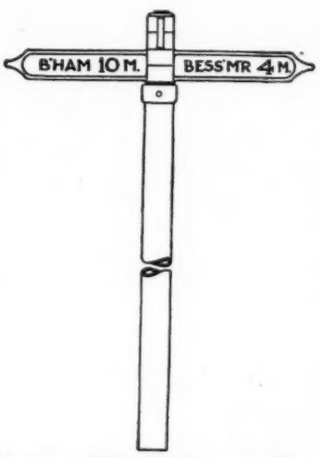
(*Continued on page 271.*)

NEW APPLIANCE

ROAD SIGN POST.

With Self-Locking Device.

A road sign post requiring no bolts for attaching the guide signs has been brought out by the U. S. Cast Iron Pipes & Foundry Co., Burlington, N. J. The post is made specially to resist rust and decay, and holds any number of sign boards at any desired angle. No bolts are necessary, as the device for attaching is self-locking. The post is 4 in. in diameter and 8 ft. long, and the boards 4 by 16 in. The device is known as the "Keystone Dixie" highway sign.



"Keystone Dixie" Highway Sign.

INDUSTRIAL NEWS

Cast Iron Pipe.—Government prices remain constant, but there is still a tendency to cut where business is competitive. Quotations: Chicago, 4-inch, class B and heavier, $57.30; 6-inch, $54.30. New York, 4-inch, class B and heavier, $58.35; 6-inch, $55.35; 3-inch, $65.35. Birmingham, 4-inch, class B and heavier, $52; 6-inch, $49; class A $1 extra.

Electric Hoist Manufacturers' Associaiton.

Manufacturers of electric hoists have organized the Electric Hoist Manufacturers' Association consisting of the following companies: The Brown Hoisting Machinery Company, Detroit Hoist & Machine Company, Euclid Crane & Hoist Company, Franklin-Moore Company, Link-Belt Company, Roeper Crane & Hoist Works, Shepard Electric Crane & Hoist Company, Sprague Electric Works and Yale & Towne Manufacturing Company. The officers of the association are: F. A. Hatch, chairman, Shepard Electric Crane & Hoist Company; F. W. Hall, vice-chairman, Sprague Electric Works; C. W. Beaver, secretary-treasurer, Yale & Towne Manufacturing Company. The membership of the association is confined to those engaged in the manufacture of monorail electric hoists.

The association holds monthly meetings for the purpose of studying the specific needs of the hoist user and to develop standardized methods of presenting information. The association will consider uniform nomenclature pertaining to types and parts of electric hoists, fix upon a standard by which hoist motors shall be rated and promote the standardization of electric hoists as far as possible. It will also collect and disseminate information and statistics relative to the electric hoist industry, provide facilities and opportunities for study and education in regard to the economics of the industry, extend the use of the product by pointing out the great number of material-handling problems of different classes that can be solved by the use of electric hoists, promote co-operation among the members and disseminate information and recommend to the members well-established principles as to both construction and equipment that will tend to eliminate any possibility of inferior equipment.

The association has offered the services of member companies to the government in meeting the great demand for their product. The War Industries Board of the government has requested full information concerning the ability of the electric hoist manufacturers to handle the volume of business offered them, as well as regarding the effect of priority orders and embargoes on shipments upon the trade.

Improved Clay Pipe Installation.

With the broad object of improving installation methods for vitrified clay pipe, the **Wyatt Engineering Company** has perfected its organization and commenced manufacturing operations in Columbus, O. It is also the purpose of the company to offer its services as consultants in sewer work and other operations entailing the use of vitrified pipe. DeWitt H. Wyatt, for whom the company is named, is the inventor of the Flex-Form runner or mold, used in the rapid production of poured joints for vitrified pipe. The initial task of the company is the production of the Flex-Form and its introduction in every form of underground work where tightness in the joint is essential.

Mr. Wyatt has associated with him as an organizer of the company, W. C. Groeniger, state plumbing inspector of Ohio, and a recognized authority on the subject of house drains and house sewers. Mr. Groeniger has been requisitioned by the Federal government and is now on his way to Jerusalem to help solve sanitary problems there. Before leaving, Mr. Groeniger wrote a complete specification for the installation of vitrified house drainage, using the Flex-Form joint, as well as a specification for testing, which will be the basis of the company's propaganda for tight house drains.

It is expected shortly to announce a method of pouring grout joints that will permit immediate backfilling on large sewer operations using excavating machinery. Another of the Wyatt projects is the installation of interior vertical stacks of vitrified pipe under a specification that promises to meet every objection on the score of security and permanence.

No Bulky Exhibits at Water-Works Conventions.

No heavy or bulky exhibits will be permitted at the annual convention of the American Water-Works Association which is to be held at St. Louis, May 13-18, or at the Southwestern Water-Works Association convention which will be held at Tulsa, Okla., April 23-26. The limitation of exhibits to pictures and small samples, such as a salesman may carry, was decided upon by the exhibit committee of the Water-Works Manufacturers' Association at a recent session in New York. The step was taken in order to aid the government in relieving freight congestion.

General Electric Company, Schenectady, N. Y., is planning to erect 400 to 500 modern dwellings near its plant at Erie, Pa., which will comprise the largest of the General Electric group. The number of employes has increased to such an extent that it is necessary to erect these hundreds of buildings to house them.

NEWS OF THE SOCIETIES

(*Continued from page* 270)

Strong demand exists in most of the up-state cities in favor of public operation of one or more public utilities, according to reports made at the conference by representatives of sixty-nine cities. The convention adopted resolutions calling on the legislature and governor Whitman to enact a permissive municipal ownership law. "This conference of officials urges the legislature to enact a measure which will permit any municipality, after a vote by its people, to construct, own and operate gas, light, heat and power plants and street railway lines," the resolution states. "This is necessary that the residents of the cities may have a means of relief from the rate increases now being made or threatened." The conference declared in favor of the Wagner-Donohue bill. It is provided in the bill that before definite steps are taken toward acquiring or constructing municipal utilities plants, the question is to be submitted to the voters on petition. The general legislative committee of the conference at a meeting unanimously approved the bill after it had been amended according to suggestions made by the conference.

The conference of corporation counsels approved two bills to extend the powers of the Public Service Commission. One bill grants a right to the

Public Service Commission to inspect all records of utilities companies in behalf of municipalities, so that municipalities can have financial data when petitions for changes in fare are presented. The second bill authorized Public Service Commissions to suspend rate increases where a public utilities corporation has filed a schedule, pending hearings and decisions of the commission.

William P. Capes, secretary of the conference recently reviewed the legislative program to which the mayors are now committed, and for which they are actively working at the Capitol, through their advisory and general legislative committees. The mayors are concentrating, among other things, upon recommendations for the simplification of election machinery within the state, and for the reduction of election expenses. The conference has a large legislative program for this year, consisting in the main of advocacy of municipal ownership of public utilities, state control of water power resources and amendments to the Public Service Commissions law, making it more impartial and inclusive, in addition to the work for election simplification. The conference is interested in no less than two hundred bills pertaining to affairs of cities which are now the business of this session.

It has prepared ten measures, which are as follows: Bills to amend the state highway traffic act, which was passed last year; to legalize the expenses of city officials who attend conventions; two bills for uniform municipal bonds; to permit cities to make up deficiencies caused by loss of revenue from the excise tax (if cities vote "dry"); two bills to amend the Public Service Commission law: first, to permit Public Service Commissions to suspend schedules of rates filed by any public utilities company pending either an investigation by the commission or a determination after a protest filed by municipalities. The amendment requires every public utility company filing a schedule of rates to which there are objections by any municipality to make it possible for the municipality to examine the books, records, and property valuation of the corporation.

This bill, it is said, will answer the objections that have been made to the bill introduced at the beginning of the session by senator Graves, which was designed as an easement for the people in his section who were harassed by the natural gas companies and their applications for increase in rates. The Graves bill went over the head of the Public Service Commission of the Second District in endeavoring to legislate about matters then pending before the commission and did not regulate the procedure regarding rate increases by other public utility corporations, on which grounds objections were brought. The conference bill also places the burden of proof on the public utilities companies whenever a protest is made by a municipality against an increase in rates.

Bills to amend the education law to take care of local conditions in Hornell and Little Falls; to fix a minimum salary for mayors of third-class cities. In thirteen cities of the state, mayors get no salary at all, and, according to Mr. Capes, they would not be so indelicate as to ask, so the conference will be the go-between. The conference also prepared the Welsh-Murphy "home-rule" bill.

The annual conference will be held in Newburgh this year, some time in June.

American Society of Engineering Contractors.

The board of directors of the American Society of Engineering Contractors at their recent annual meeting decided to establish an office for the society in St. Louis as a more central location. From this office prompt service will be available. An assistant secretary, L. W. Helmrich, who is an engineer, has been placed in charge.

Albert P. Greensfelder, who recently became president of the society, has sent to the members and friends of the society a bulletin in which stress is laid upon the duties which, Mr. Greensfelder says, the engineering contractors should perform for the nation.

Mr. Greensfelder announces that it is his intention to reach the members frequently through the bulletin service.

PERSONALS

The Miami Conservancy District, Dayton, O., has appointed the following new engineers: Harold W. Home, since 1912 division engineer in charge of reservoir and dam construction for Hartford, Conn., and previous to that section engineer of the New York Board of Water Supply on the Catskill project; Vincent P. Odoni, of Tucson, Ariz., who has been engaged on irrigation and hydroelectric work since coming from Switzerland in 1907; Ivan P. Goodner, irrigation engineer in California, and Arthur L. Powells, of the U. S. Reclamation Service.

Chambers, John, who was at one time city engineer of Louisville, Ky., and consulting engineer, has been appointed city engineer to succeed David R. Lyman. He was in charge of the work of constructing the sewer which connects Camp Zachary Taylor with the Beargrass intercepting sewers.

Myers, C. E., district engineer, Pennsylvania state highway department, has been commissioned captain in the United States Engineer Reserve Corps, and assigned to duty at Camp Lee,

Reimer, Maj. Frederick, of the First Battalion, 104th Engineers, stationed at Camp McClellan, Anniston, Ala., has resigned from the army. He resumes the duties of county engineer of Essex County, New Jersey.

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Juniata, Neb., is to build a TRANSMISSION LINE to Hastings, Neb. The engineer for the work is W. S. Watson.

Pleasant Hill, Mo., is to build SEWERS according to plans and specifications prepared by the firm of W. B. Rollins & Co.

Bids are being called for constructing the CIVIC CENTER of Baltimore, to cost about $1,000,000. The architects for the project are Carrere & Hastings.

In opposing an increase in GAS RATES, Wilkes-Barre, Pa., has retained Judson C. Dickerman as its expert before the public service commission.

A FILTER PLANT and PUMPING STATION are to be built by Westfield, N. Y. Plans are in course of preparation by the consulting engineering firm of Gannett, Seelye & Fleming.

In planning its SEWER SYSTEM and SEWAGE TREATMENT WORKS the borough of North Arlington, N. J., has had the consulting engineering services of Thomas F. Bowe.

Jacksonville, Ill., is to build an impounding DAM for its WATER SYSTEM. The consulting engineering firm of Pearse & Greeley has been retained for the preliminary work.

Lawrence County, Wampum, Pa., is to build a BRIDGE and CULVERTS. The engineer for the work is T. A. Gilken.

Vermillion, O., is to make PAVING IMPROVEMENTS. Plans and specifications are being prepared by George Champe, consulting engineer.

Concord, N. C., is to make STREET IMPROVEMENTS. The engineers for the work are the firm of Anderson & Christie.

Mount Olive, Ill., is to improve its LIGHT PLANT and construct a WATER PUMPING STATION. The engineer for the proposed work is W. S. Merkle.

Bonds for $40,000 have been approved by the voters of Fayette, Mo., for the construction of a WATER SYSTEM, plans having been completed by Burns & McDonnell.

Portsmouth, Va., is considering the purchase of the Portsmouth, Berkley & Suffolk Water Co. An APPRAISAL is to be made by Leonard Metcalf for the company and C. F. Harper, who is not an engineer, for the city. These two will decide whether to choose a third appraiser or to attempt to decide on an appraisal themselves.